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REPORT No. 81 May, 1942

GOVERNMENT AGRICULTURAL RESEARCH INSTITUTE
TAIWAN, NIPPON (JAPAN)

Prof. KISABURO SHIBUYA, *Director*

SOME INJURIOUS INSECTS OF AGRICULTURAL PLANTS AND FOREST TREES IN THAILAND AND INDO-CHINA, II COCCIDE

By

Ryoichi TAKAHASHI

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In the first part under this general title the plant lice or Aphididae were dealt with. In the present report an account is given of the scale insects or Coccidae obtained by the author in his expedition to Thailand and Cambodia, French Indo-China.

It hardly seems necessary to state the great economic importance of this group of destructive insects, which is especially rich in species in the tropical or subtropical regions of the world.

Little attention has been paid to these insects in Thailand and French Indo-China, and I hope this report will much contribute to the economic entomology of the districts concerned and will also stimulate further studies on these insects in the south-eastern part of Asia.

Prof. Dr. Kisaburo SHIBUYA

Director.

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SOME INJURIOUS INSECTS OF AGRICULTURAL PLANTS AND FOREST TREES IN THAILAND AND INDO-CHINA, II COCCIDE*

By

Ryoichi TAKAHASHI

Introduction

The Coccidae or scale insects are essentially a tropical or subtropical group of insects and include a large proportion of injurious species attacking cultivated plants in the south-eastern part of Asia. These insects of Ceylon, India, Malaya, Philippine and Formosa have been well studied, but they have been scarcely explored in Thailand (Siam) and French Indo-China.

So far as I have been able to ascertain about 18 species of the family have been recorded from Thailand and about 15 from French Indo-China in the following literature:

(Thailand)

LINDINGER, L. 1911. Zeits. f. wiss. Insbiol., VII, pp. 86–90 (*Chrysomphalus aurantii* MASK. from Thea on Doi Sutep).

REINKING, O. A. 1921. Philip. Agr., IX, p. 185 (*Saissetia nigra* NIETN. on Hibiscus).

STRONG, L. A. 1922. Mthly. Bull. Calif. Dept. Agr., XI, pp. 471–476 (*Chrysomphalus aurantii* MASK. and *Hemichionaspis aspidistrae* SIGNT. on pomelo).

COCKERELL, T. D. A. 1929. Proc. Ent. Soc. Washington, XXXI, p. 16 (*Drosicha burmeisteri* WESTW. from Doi Sutep).

COCKERELL, T. D. A. 1929. Science, LXX, no. 1806, p. 150 (*Coccus siamensis* n. sp. from Quercus on Doi Sutep).

GREEN, E. E. 1932. Stylops, I, pp. 31–33 (*Icerya aegyptiaca* DOUGL.).

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* Part I (Aphididae) of this series of papers was published in the Report no. 78 (1941) of this Institute.

SHIRAIWA, H. 1939. Noji Kairyo Shiryo, no 137, p. 152 (*Pseudococcus citriculus* GREEN on Citrus).

ANONYMOUS. 1940. Noji Kairyo Shiryo, no. 152 (*Aspidiotus destructor* SIGNT. on palm *Aulacaspis mangiferae* NEWST. on mango, *Lepidosaphes beckii* NEWM. on Citrus, etc.).

TAKAHASHI, R. 1940. Formosan Agr. Rev., XXXVI, pp. 975-994 (*Aspidiotus destructor* SIGNT. on Samanea, *Coccus* sp. on Butea frondosa).

TAKAHASHI, R. 1941. Tenthredo, III, pp. 201-207 (*Allomyrmococcus acariformis* n. sp. on a legume, *Paramyrmococcus chiengraiensis* n. sp. on a vine).

(French Indo-China)

SILVESTRI, F. 1926. Boll. Lab. Zool. Portici, XVIII, pp. 271-215 (*Xenococcus annandalei* n. sp.).

SILVESTRI, F. 1929. 4th Intern. Congr. Ent. Ithaca, N. Y., 1928, Trans. II, pp. 897-904 (*Icerya seychellarum* WESTW., *Ceroplastes rubens* MASK., *Aonidiella aurantii* MASK., *Prontaspis citri* COMST., *Lepidosaphes pinnaeformis* BOUCHÉ, *Parlatoria zizyphus* LUCAS, *Fiorinia theae* GREEN, all from Citrus).

BELLIO, G. 1929. Boll. Lab. Zool. Portici, XXII, pp. 219-243 (*Parlatoria cinerea* DOANE et HADDEN on Citrus, *Porogymnaspis silvestrii* n. sp., *Parlatoria alba* n. sp.).

COMMUN, R. 1930. Bull. ecón. Indo-Chine, XXXIII, pp. 1-28 (Rev. Appl. Ent., A. XIX, pp. 24-25, 1931) (*Coccus viridis* GREEN on coffee, *Pseudococcus* spp. on sugar cane).

DU PASQUIER, R. 1932. Bull. ecón. Indo-Chine, XXXV, pp. 689 B-720 B (Rev. Appl. Ent., A, XXI, p. 259, 1933) (*Coccus viridis* GREEN on tea and coffee, *Pseudococcus citri* RISSO on coffee, *Saissetia coffeae* WALK. on coffee, *Pinnaspis theae* MASK. on tea).

CARESCHE, L. 1937. C. R. Inst. Rech. agron. for. Indochine, 1935-36, 2, pp. 175-194 (*Pseudococcus adonidum* L. on kapok).

In the present report are set forth the results of my studies on the materials obtained during my expedition to these countries. My observations on the lac insects were published elsewhere.*

In the following lines about 98 species are enumerated, of which 25 are described as new to science, and 4 new genera are proposed. Among the species treated, 88 are known to occur in Thailand and 22 in French Indo-China, 12 being found in both countries.

* Formosan Agr. Rev., XXXVI, pp. 975-994, 1940; Trans. Nat. Hist. Soc. Formosa, XXXI, pp. 138-141, 1941.

The species attacking cultivated plants in these countries are for the most part those widely distributed in the world or in the neighbouring districts as is to be expected, but some are apparently indigenous to these regions. For example among 11 coccids found on Citrus in Thailand, one seems to be indigenous, and 2 of 11 species on mango are now known to occur in that country alone. The trees of Ficus are attacked by many species, and many indigenous forms are found on wild trees, especially on the Fagaceae, as in Formosa.

In this contribution references are given to those species only, which are not widely spread and unfamiliar to economic entomologists; and the materials, upon which this paper is based, are preserved in the author's collection. The family Coccidae is divided by recent specialists into several families, but is here treated as one conventional family.

Subfamily **Margarodinae**

Drosicha burmeisteri WESTW.

Fernald, Cat. Cocc. World, p. 18 (1903); Cockerell, Proc. Ent. Soc. Washington, XXXI, p. 16 (1929).

Thailand: Mt. Sutep, some adult females (IV. 1940).

Cockerell recorded the male from Mt. Sutep (Doi Sutep). I collected some adult females of *Drosicha* on *Machilus*, *Rhus*, *Quercus*, *Dipterocarpus* and other trees, which contain 2 species and one of them may be the species recorded by Cockerell. In one of the species collected, body setae short, very stout, spine-like, pointed apically, a little curved, each arising from a transparent circular or oval area; dermal pores each on a similar clear area. It differs from *D. dalbergiae* GREEN (Vayssiére, Ann. Epiph., XII, 1926, p. 275) in the shorter setae, and in the dermal pores with a larger central loculus, which is a little narrowed, with 5 or 6 processes on its border. In the other species, body setae longer, but rather stout; dermal pores with the central loculus mostly narrowed and possessing about 6 very short processes on its border; derm without translucent areas. The species is different from *D. contrahens* WALK. (GREEN, Ann. Mag. Nat. Hist., ser. 9, XII, 1923, p. 168) in the shorter dermal setae.

An accurate study of the young larvae is necessary for the identification of species in this group, and now I retain these 2 species undetermined. It is very noticeable that the adults were found in April, the hottest month in Thailand, though the adults of *Drosicha* appear in spring or winter in Japan and Formosa.

Drosichiella cellulosa n. sp.

(Adult female) Body large. Derm densely with many prominent translucent, subcircular or oval, areas of various sizes; spaces between the translucent areas narrower than the diameters of the larger translucent areas, forming reticulations; each of the larger translucent areas usually with a pore near the center. Dermal pores small, circular, larger in diameter than the bases of dermal setae, nearly as large as the smallest translucent areas, with the central loculus mostly narrowed and possessing 6 very short processes on its border. Dermal setae dense, numerous, short, a little curved, thin on the distal part, expanded basally, subequal in length; some very long rather fine setae in a row on the anterior and posterior margins; 2 pairs of longitudinal irregular rows or groups of very long setae on the submarginal area of the posterior part, each row or group reaching the margin, with about 8 setae, of which those on the margin are larger. Antennae 8-segmented, with many long fine setae, which are as long as the width of 2nd segment; the 2nd segment as long as wide; distal 3 segments a little narrower than the 5th; the 5th about 1.5 times as long as wide; the 8th constricted at the middle part, somewhat longer than the 6th and 7th taken together; relative length of segments about as follows: II-13, III-19, IV-15, V-16, VI-15, VII-13, VIII-30. Eyes smaller than the 2nd antennal segment, latero-posterior to the antennae. Rostrum small, rostral loop very short. Legs with many long fine setae, which are longer than the width of tibiae; trochanters prominently constricted at middle; hind femora somewhat shorter than the tibia, about 2.7 times as long as wide; tibiae a little narrowed on the distal half, with mesal setae, which are much expanded basally; hind tibiae about 2.7 times as long as the tarsus; tarsi with similar setae. Thoracic spiracles large, stout, much widened on the distal part, a little wider than long, with many pores. Abdominal spiracles 7, with a few pores. A ventral cicatrix small, cir-

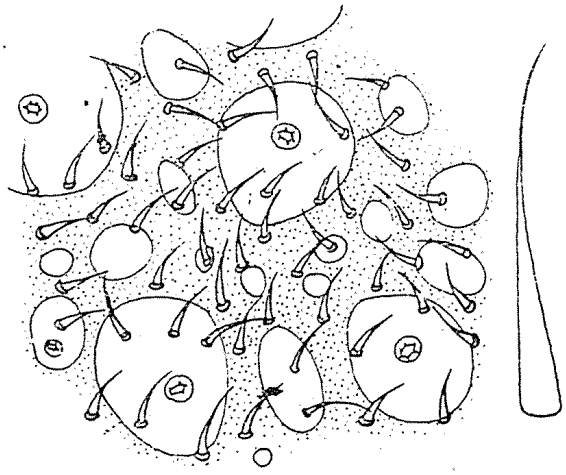

Fig. 1.
Drosichiella collulosa n. sp.
Adult female.
Dorsum and dorsal seta.

cular, larger than the anus. Area surrounding the anus without translucent areas, but with many pores and setae, which are similar to those on other parts, and very few longer setae present in front of the anal opening. Body 11–14 mm. long, 7–8.5 mm. wide, antenna 2.2 mm., hind femur 1.3 mm., hind tibia 1.5 mm., hind tarsus 0.6 mm., dorsal seta 0.042–0.055 mm., marginal bristle 0.46 mm.

Thailand: Mt. Sutep, 2 adult females (9. IV. and 13. V. 1940); host unkown.

This species differs from other described females of the genus in the body derm with dense translucent areas.

Perissopneumon sp.

(Adult female) In dried specimens blackish brown, with pale yellowish short stout glassy secretions in a row along the margin, which are hard, truncate and slightly tapering; dorsum with a large v-shaped ridge on the anterior part and a pair of longitudinal ridges, concave and with 2 transverse ridges on the anterior half between the longitudinal ridges. Body oval, very hard, about 10 mm. long.

Fig. 2.
Perissopneumon sp.
Adult female.

Thailand: Lampang, on a legume (15. IV. 1940); Bangkok, on *Samanea saman* (30. IV. 1940); some adult females. Malaya: Singapore, on *Eugenia* sp. (17. III. 1940).

Probably identical with *Perissopneumon* sp. recorded from Malaya by H. MORRISON (Philippine Jl. Sc., XVIII, p. 640). Closely related, to, but differs from *P. convexa* MORRISON as follows: Body with no median longitudinal ridge, but with 2 transverse ones between the lateral longitudinal ridges. Distal antennal segment longer, as long as, or slightly longer than, the th-9th taken together. Legs with some very long fine setae; tibiae with stouter setae on the mesal side. Anal opening surrounded with a large circular group of pointed spine-like setae, which are stout, dense, similar to the ventral submarginal ones, and intermixed with much fewer

long bristles and many pores. Ventral cicatrices many, variable in size; etc.

I can not compare the specimens with *P. ferox* NEWST. (Ent. Month. Mag., XXXVI, p. 250) and other related forms briefly described, and retain them undetermined.

A few specimens of *Lecaniodrosicha* sp. were also taken on a tree of the Fagaceae on Mt. Sutep, Thailand, which is related to *L. lithocarpi* TAKAH., but is apparently different. The species is represented by a few inadequate specimens and is not here described.

Icerya jacobsoni GREEN.

Thailand: Chiengmai (2. IV. 1940); Mt. Sutep (8 and 11. IV. 1940); Ubon (4. V. 1940); some females, hosts unknown.

Icerya aegyptiaca DOUGL.

Thailand: Bangkok Noi, many on *Ceiba pentandra* (27. III. 1940); Mt. Sutep (11. V. 1940).

Icerya tangalla GREEN.

Indian Mus. Not., IV, p. 7 (1896); Stylops, I, p. 32 (1932).

Thailand: Bangkok, on mango (30. III. 1940); on *Ficus* (27. III. 1940); some females.

A few specimens were observed on a tree of the Lauraceae at Singapore (16. III. 1940). Previously recorded from India and Ceylon.

Icerya seychellarum WESTW.

Thailand: Denjaya, a few on *Artocarpus* (1. IV. 1940); Mt. Sutep, some on *Citrus* (5. IV. 1940).

Icerya zimmermanni GREEN.

Stylops, I, p. 32 (1932).

Thailand: Chiengmai (3. IV. 1940); Lampang, a few on *Ficus religiosa* (15. IV. 1940).

Hitherto known only from Java. This species is characterised by the presence of many ovate pores with a depressed bilobed central area. *I. purchasi* MASK. was not discovered in Thailand.

Subfamily **Eriococcinae**

Rhizococcus siamensis n. sp.

(Adult female) Blackish brown in dried specimens. Body subcircular, about 1.25 times as long as wide in specimens mounted on slides (excluding anal lobes). Body with many very long bristles in a row along the

margin, which are very thin on the distal part, pointed, somewhat curved, and 2 or 3 in number on the side of each abdominal segment; 2 setae at the middle of front margin sometimes stouter, spine-like, but slender, conical, pointed. Do um rather sparsely with many much shorter setae, which are about 18 and most of them are in a row on each of anteri r abdominal

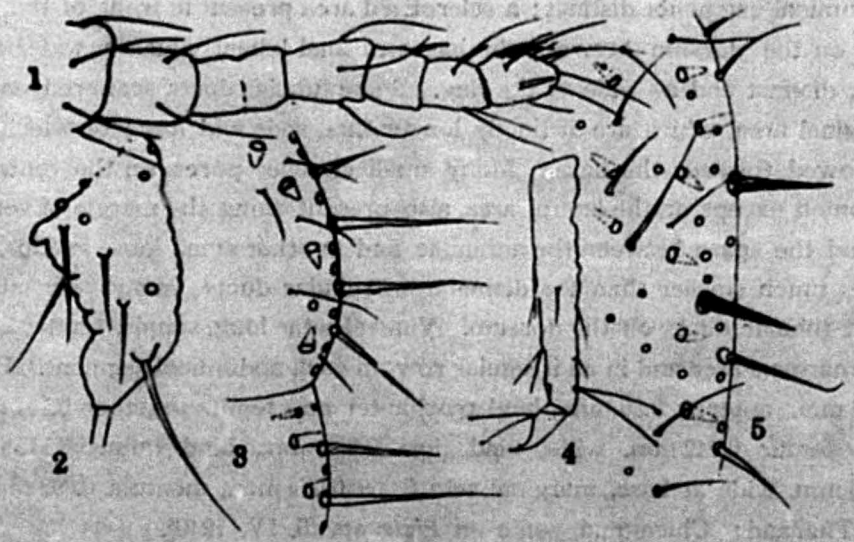

Fig. 3.
Rhizococcus siamensis n. sp.
Adult female.
1. Antenna. 2. Anal lobe. 3. Margins of abdominal segments.
4. Hind tarsus. 5. Frontal margin of head.

segments, and fewer on the posterior segments, those on the submarginal area longer. Antennae stouter and longer than the tibia and tarsus taken together, 7-segmented, with some very long setae, especially on the distal half; the 1st segment much wider than other segments, the 3rd a little longer than wide, the 5th wider than long, the 5th and 6th with a stout seta, the 7th with 2 stout setae; relative longth of segments about as follows: II-9, III-9, IV-8, V-5, VI-5-6, VII-8. Mentum as long as wide, faintly 2-segmented, pointed, the distal segment distinctly narrower than the basal, longer than wide; rostral loop reaching beyond the middle coxae. Legs with a few long setae; hind coxae with many small pores; trochanters distinct, with a very long seta; hind femora nearly as long as the tarsus; hind tibiae distinctly shorter than the tarsus; hind tarsi with 2 very long cap tate digitules; claws with a minute denticle; ungual digitules thinner than the tarsal ones, slightly capitate. Anal lobes sclerotised, a little concave on the lateral side, with a few or some circular pores and some long

simple setae, of which setae one near the apex is much longer, but much shorter than the apical one, and shorter than the anal ring setae; apical setae much longer than the lobes. Anal ring with 6 very long setae, which are reaching beyond the apices of anal lobes; a similar seta present between the ring and each anal lobe. Spiracles on sclerotised areas. Abdominal segments distinct; a sclerotised area present in front of the anal ring on the dorsum between the bases of anal lobes, which is wider than long, distinct and as wide as the ring. Some tubular ducts scattered on the marginal area, which are distinctly longer than wide and many of which are narrowed towards the base. Many small circular pores on the venter of abdomen except on the lateral area, also present along the margin of venter, behind the space between the antennae and in other small loose groups, the pores much smaller than the diameter of tubular ducts; many very minute short tubular ducts on the dorsum. Ventral setae long, simple, scattered on the marginal area and in an irregular row on each abdominal segment. Body 1.5–2 mm., antenna 0.25 mm., hind trochanter and femur together 0.157 mm., hind femur 0.042 mm. wide, hind tibia 0.092 mm., hind tarsus 0.115 mm., 0.023 mm. wide at base, marginal seta 0.069–0.074 mm., mentum 0.092 mm.

Thailand: Chiengmai, some on *Ficus* sp. (6. IV. 1940).

Related to *R. philippinensis* MORRISON, but may be differentiated from it by the thin and long marginal setae. Characterised by the long simple marginal setae and by the presence of pores on the hind coxae.

Eriococcus sutepensis n. sp.

(Adult female) Secretion white, with transverse dorsal ridges. Body oval, with distinct abdominal segments. Antennae 8-segmented, a little longer than the hind tibia and tarsus together, as long as the space between themselves, with very long fine setae on the basal 2 and distal 4 segments; the 3rd segment the longest, about twice as long as wide, as long as, or a little longer than, the 4th; the 6th and 7th equal in length, the shortest, as long as wide; relative length of segments about as follows: II–12, III–15, IV–13–15, V–9, VI–6, VII–6, VIII–10. Eyes small, distinct. Mentum conical, longer than wide. Spiracles without pores. Legs with a few very long fine setae; hind coxae longer than wide, distinctly and abruptly concave on the outer side near the basal part, with granules in transverse rows; hind femora as long as the tarsus; hind tarsi a little longer than the tibia, with 2 long fine capitate digitules; claws with a minute tooth near the apex, and with 2 fine digitules which are as fine as, and capitate like, the tarsal ones. Many

truncate spines in a row along the whole body margin, which are rather slender, a little widened towards the base and about 4 or 5 on the side of each abdominal segment; many similar, but slightly shorter, truncate spines scattere on the dorsum except on some small areas on the cephalothorax, the groups of spines reaching the marginal series on the abdomen. Many very long fine setae scattered on the dorsum, which are much fewer than the spines; similar fine setae in rows on the venter. Many tubular ducts on the dorsum and the lateral part of venter, which are more in number than the spines and more densely present on the lateral part of venter. Many minute thin ducts on the dorsum; minute subcircular pores many on the venter and numerous on the posterior part and along the margin. Anal lobes sclerotised, about twice as long as wide, with a few very small tubercles, and 2 truncate spines on the mesal side, which are a little longer than those on the dorsum of body; a very long apical seta fine, much longer than the lobes and a subapical one. Anal ring with 10 bristles. Body 4 mm., 2.3 mm. wide in specimens mounted on slides, antenna 0.42 mm., anal lobe 0.12 mm., apical seta of anal lobe 0.28 mm., dorsal spine 0.028–0.037 mm., marginal spine 0.046 mm., hind femur 0.18 mm., hind tibia 0.16 mm., hind tarsus 0.18 mm.

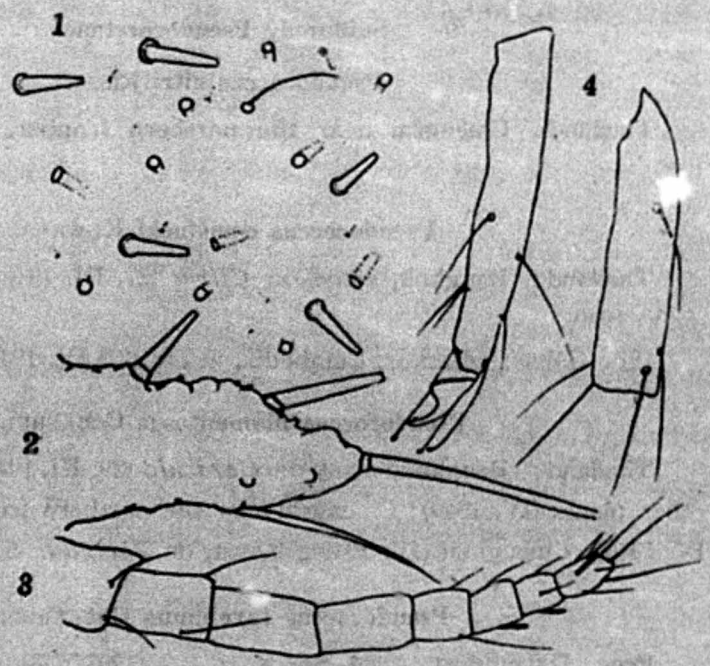

Fig. 4.
Eriococcus sutepensis n. sp.
Adult female.
1. Dorsal spines, pores and seta. 2. Anal lobe.
3. Antenna. 4. Middle tibia and tarsus.

Thailand: Mt. Sutep, a few adults and some larvae on the branches of *Quercus* sp., protected by *Crematogaster* (IV. 1940).

This species is characterised by the dorsal spines being slender and truncate, the 8-segmented antennae, the presence of a minute denticle on

the claws, etc. Related to *E. rhodomyrti* GREEN, but the dorsal spines are truncate.

Kermes siamensis COCKERELL.

Coccus siamensis COCKERELL, Science, LXX, no. 1806, p. 150 (1929).

Talla siamensis LINDINGER, Ent. Jahrbuch, 1937, p. 197 (1937).

Thailand: Mt. Sutep, a few old dead females on *Quercus* sp. (14. IV. 1940).

Subfamily **Pseudococcinae**

Pseudococcus citri RISSO.

Thailand: Chiengrai near the northern frontier, on *Citrus* (16. IV. 1940).

Pseudococcus comstocki KUWANA.

Thailand: Bangkok, some on *Citrus* (27. III. 1940); Chiengmai, a few (5. V. 1940).

Indo-China: Angkor, Cambodia, a few (24. IV. 1940).

Pseudococcus filamentosus COCKERELL.

Thailand: Bangkok, many on *Gardenia* (29. III. 1940), on *Zizyphus* and other plants (IV. 1940); Chiengrai near the northern frontier, on *Citrus* (16. IV. 1940); Chiengmai (IV. 1940); Korat, on *Zizyphus* (5, V. 1940).

Pseudococcus tayabanus COCKERELL

Proc. Davemport Acad. Sc., X, p. 129 (1905); Betrem, Archiv. v. Koffiecult. Ned.-Ind. XI, p. 57 (1937).

Thailand: Bangkok Noi, many on *Achras zapota* (27. III. 1940); Korat, some on *Ficus* sp. (5. V. 1940).

Indo-China: Ankor, Cambodia (24. IV. 1940).

Pseudococcus angkorensis n. sp.

(Adult female) Body oval, about 1.5 times as long as wide in specimens mounted on slides. Antennae 8-segmented, with some long fine setae, which are as long as the 6th segment; the 3rd segment 1.5 times to twice as long as wide; the 4th the shortest, as long as, or slightly longer than, wide; the 4th-7th a little narrowed basally; the 7th with a stouter seta; relative length of the segments about as follows: II-8, III-8, IV-4-5, V-5, VI-6, VII-6-7, VIII-15-16. Distal rostral segment longer than the basal, conical, longer than

wide, pointed; rostral loop reaching beyond the middle coxae. Spiracles normal, dermal pores not crowded near them. Legs rather short, wanting pores; hind femora stout, about 2.7 times as long as wide, somewhat longer than the tibia, with about 8 or 9 fine setae; hind tibiae about 1.5 times as long as the tarsus; tarsal digitules long, capitate; claws with no denticle, ungual digitules stouter and more capitate than the tarsal ones. Dorsal ostioles not sclerotised on the margin, with some pores and about 2 setae on each lip. A ventral cicatrix moderate in size. Anal ring very widely sclerotised, with 6 setae, which are much shorter and slightly narrower than the apical setae of anal lobes. Anal lobes distinct, not sclerotised dorsally, with some triangular pores loosely scattered and a few fine setae on the dorsum, and with a narrow sclerotised bar, about 5 short fine setae and a few triangular pores on the venter. Cerarii not sclerotised, 18 pairs in all, a little protruding, with 2 spines, lacking setae; the spines thin at the tip, sometimes curved on the apical part, subequal in size; the last cerarii not defined, with some pores loosely scattered. Triangular pores scattered over the body; larger circular pores not numerous, only on the posterior part of venter, about 20 around the genital opening, present also in 4 rows in front of the genital cluster, about 9 in each of the posterior 3 rows; very small tubular ducts present on the marginal area of posterior part, about

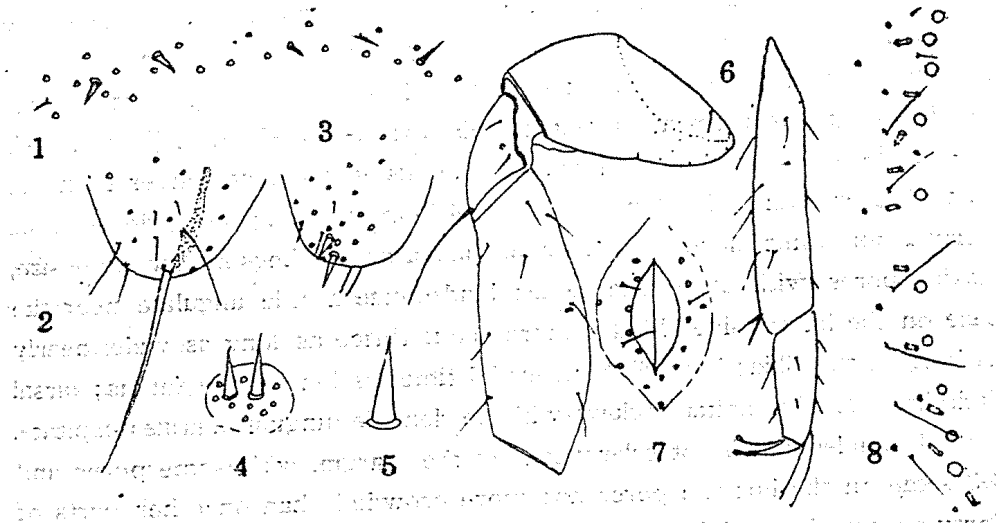

Fig. 5.
Pseudococcus angkorensis n. sp.
Adult female.
1. Dorsum of abdominal segment. 2. Anal lobs (venter). 3. Anal lobe (dorsum). 4. Cerarius. 5. Cerarian spine. 6. Hind leg. 7. Dorsal ostiole. 8. Venter of posterior abdominal segment.

8–10 on the side of each posterior segment, a few on the venter of abdomen except on the basal part, absent on the anal lobes. Dorsal setae spine-like, but slender, thin at the apex, sometimes curved, not narrowed basally, not numerous, variable in length, 8–10 in a row on each abdominal segment, some similar to the cerarian spines in shape, but a little more slender. Ventral setae long, fine, not numerous, in rows. Body 1.2 mm., antenna 0.28 mm., hind femur 0.14 mm., hind tibia 0.13 mm., hind tarsus 0.074 mm., anal ring seta 0.083 mm., apical seta of anal lobe 0.185–0.2 mm., dorsal seta mostly 0.018–0.023 mm., last cerarian spine 0.018 mm.

Indo-China: Angkor, Cambodia, many (23. IV. 1940), host unknown.

Differs from *P. kraunhiae* KUWANA in the shorter tibiae, the fewer circular pores on the posterior part of venter, only some of the dorsal setae being curved, etc., and from *P. citri* RISSO in the shorter tibiae, the stouter dorsal setae, the smaller body, etc. Different from *P. chiponensis* TAKAH. in the narrower legs, the cerarii being present on the head and thorax, the anal lobes with fewer pores on the dorsum, etc. Easily differentiated from *P. citrioides* FERRIS by the absence of a long seta near each abdominal cerarius and by the fewer tubular ducts.

Trionymus cambodiensis n. sp.

(Adult female) Body small, oval. Antennae 7-segmented, with some fine setae; the 3rd segment about 1.5 times as long as wide; the 5th the shortest, as long as wide; the 6th a little narrowed basally, with a stouter seta; relative length of segments about as follows: I–6, II–7, III–7, IV–6–7, V–5, VI–7, VII–18. Rostrum 2-segmented, the distal segment longer than the basal, longer than wide, tapering; rostral loop reaching the middle coxae. Dermal pores not more crowded near the spiracles. Legs moderate in size, lacking pores, with some fine setae; hind coxae a little angulate near the base on the lateral side; hind femora about thrice as long as wide, nearly as long as the tibia; hind tibiae about 1.5 times as long as the tarsus; tarsal digitules scarcely capitate; claws with no denticle, ungual digitules capitate. Dorsal ostioles small, not sclerotised on the margin, with some pores and 0–3 setae on the lip; the pores not more crowded than on other parts of dorsum; anterior ostioles less developed. Ventral cicatrix not discernible. Anal ring with 6 setae, which are much shorter and somewhat narrower than the apical setae of anal lobes. Anal lobes prominent, as long as wide, not sclerotised on the dorsum, with about 10 or less triangular pores loosely scattered and 2 or 3 fine setae on the dorsal side, but widely sclerotised on

the venter except on the mesal part, with a few triangular pores and about 5 fine setae besides the usual apical seta on the venter, one of which setae is very long, but a little shorter and much thinner than the apical one, 6 or 7 pairs of cerarii present on the posterior part, which are not sclerotised, a little protruding, not defined, lacking auxillary setae, but with 2 spines and a few triangular pores; the spines conical, rather slender, thin at the tip, pointed, subequal in size. Many triangular pores scattered over the body,

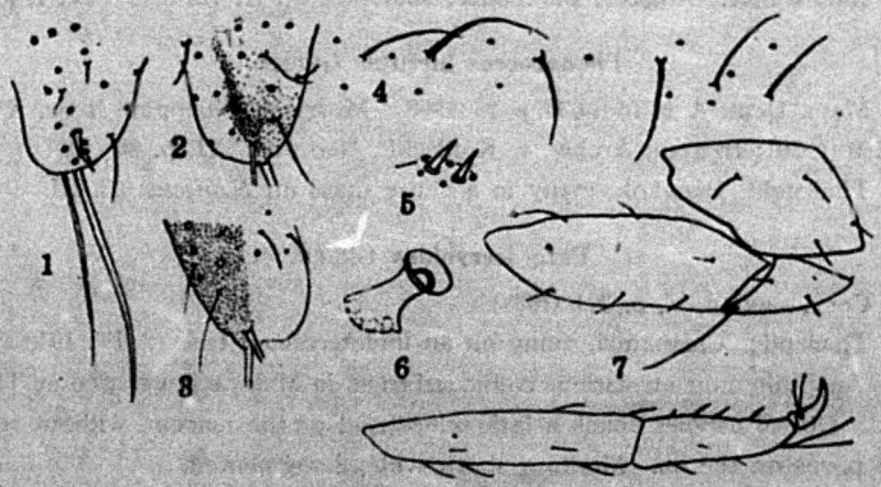

Fig. 6.
Trionymus cambodiensis n. sp.
Adult female.
1. Anal lobe (dorsum). 2. and 3. Anal lobe (venter). 4. Dorsum of abdomen. 5. Cerarius. 6. Posterior spiracle. 7. Hind leg.

over 25 pores sometines mostly in an irregular row on the dorsum of each of middle abdominal segments; larger circular pores not many, in a row around the genital opening (about 10 in front of the opening), and also in 3 rows in front of the genital row; very few or no small tubular ducts on the marginal area of posterior part. Dorsal setae long, rather stout, thin on the distal half, variable in size, mostly longer, but narrower than the cerarian spines (some similar to the cerarian ones), in rows, about 9 or 10 in a row on each of middle abdominal segments. Ventral setae long, fine, in rows. Body 1.4 mm., antenna 0.25 mm., hind femur 0.125 mm., hind tibia 0.115-0.12 mm., hind tarsus 0.074 mm., apical seta of anal lobe 0.19 mm., dorsal seta 0.023-0.06 mm. (mostly about 0.046 mm), cerarian spine 0.018 mm.

Indo-China: Angkor, Cambodia, many (24. IV. 1940), host undetermined.

This species is characterised by the long stout dorsal setae in a row on each abdominal segment, the prominent anal lobes widely sclerotised on the

venter, the circular pores in a row around the genital opening, and by the tubular ducts scarcely present. The present species is included in *Trionymus*, as the head has no cerarii.

Ferrisiana virgata COCKERELL.

Thailand: Bangkok, many on a legume and other plants (25. III. 1940); Chiengmai, common on *Samanea saman* (IV. and V. 1940).

Indo-China: Angkor, Cambodia; abundant on *Albizzia* (23. IV. 1940).

Phenacoccus hirsutus GREEN.

Mem. Dept. Agr. India, II, p. 25 (1908); Morrison, Philippine Jl. Sc. XVII, p. 169 (1920); Betrem, Archiv. v. Koffiecult. Ned.-Ind., XI, p. 80 (1937).

Thailand: Bangkok, many in a dense mass on *Hibiscus* (25. III. 1940).

Puto iceryoides GREEN.

Cocc. Ceylon, V, p. 391 (1922).

Thailand: Chiengmai, many on an undetermined tree (7. IV. 1940).

Very common on various cultivated trees in Malaya, but scarce in Thailand. Dorsal ostioles small, a little sclerotised on the margin, without setae and pores on the lip. Mentum short, wide, 2-segmented.

Puto spinosa ROBINSON.

Philippine Jl. Sc., D, XIII, p. 145 (1918); GREEN, Cocc. Ceylon, V, p. 394 (1922); TAKAHASHI, Dept. Agr. Research Inst. Formosa, Rept. no. 40, p. 43 (1929); BETREM, Archiv. v. Koffiecult. Ned.-Ind., XI, p. 91 (1937).

Thailand: Bangkok, some on mango (30. III. 1940); Chiengmai, some (7. IV. 1940).

Indo-China: Angkor, Cambodia, many on *Citrus*, mango and other trees (IV. 1940).

Antonina thaiensis n. sp.

(Adult female) Brownish black, covered with wax, strongly sclerotised, especially on the posterior part. Body almost as in *A. indica* GREEN in shape. Antennae wider than long, truncate apically, 2-segmented, with about 6 curved apical setae. Spiracles stout, much expanded basally, with many pores near the distal part. Abdomen rounded at the hind part, with or without 1 or 2 very slight segmental indentations on the margin of the posterior part, sometimes slightly indented at the hind end, with some long rather fine setae on the posterior marginal area; anal lobes absent; 1 or 2

slender conical pointed spines present on the posterior 2 or 3 segments. Anal tube opening at the hind end, long, about twice as long as wide. Anal ring seta stout, 6, not reaching the apex of the tube, usually reaching a little beyond the middle of it. Many very small pores, larger circular pores and short tubular ducts present on the derm, some of the smaller pores on shallow protuberances on the head; the larger circular pores with a thick border; the tubular ducts slender; very short simple setae very sparsely scattered on the body. Body about 3–4 mm., longer posterior seta 0.092 mm., spine on posterior part 0.019 mm., anal tube 0.185 mm.

Thailand: Bangkok, some on bamboo (27. III. 1940).

Different from *A. purpurea* SIGNT. in the wider body strongly sclerotised, the posterior extremity scarcely recessed, the shorter antennae, etc.

Another species of *Antonina* was also observed on bamboo at Bangkok, which is with the posterior abdominal segments distinct and may be *A. bambusae* MASK., but is not determined, being represented by a few inadequate specimens.

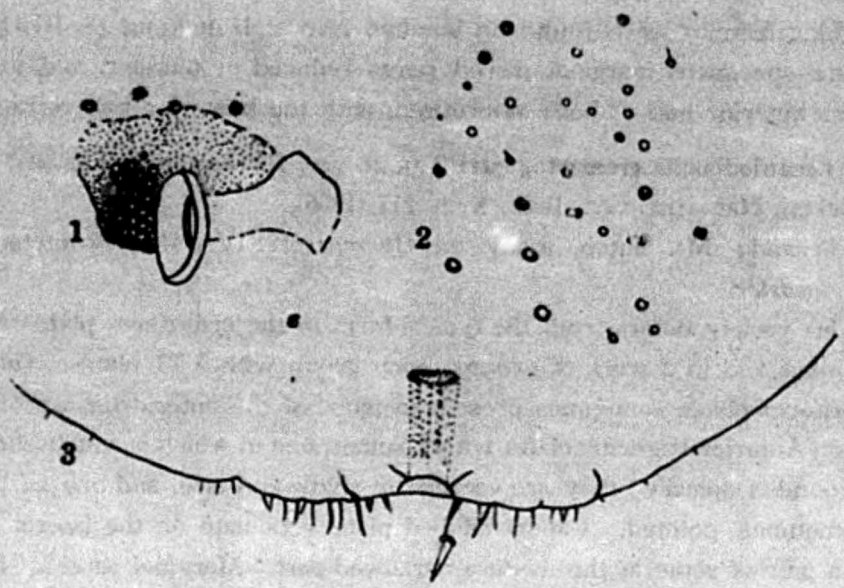

Fig. 7.
Antonina thaiensis n. sp.
Adult female.
1. Anterior spiracle. 2. Derm. 3. Posterior end of body.

Allomyrmococcus acariformis TAKAH.

Tenthredo, III, p. 201 (1941).

Thailand: Mt. Sutep, many on a legume (IV. 1940).

Paramyrmococcus chiengraiensis TAKAH.

Tenthredo, III, p. 204 (1941).

Thailand Chiengrai (16. IV. 1940); Lampang (18. IV. 1940); a few on an undetermined vine.

Subfamily **Asterolecaniinae**

Asterolecanium charmoyi GREEN.

Bull. Ent. Res., XV, p. 45 (1924).

Indo-China: Angkor, Cambodia, some on bamboo (23. IV. 1940).

A. pseudomiliaris GREEN, var. *bambusifoliae* TAKAH. (Dept. Agr. Research Inst. Formosa, Rept. no. 48, p. 11) is a synonym of this species.

Asterolecanium minutum TAKAH.

Dept. Agr. Research Inst. Formosa, Rept. no. 48, p. 10 (1930).

Thailand: Chiengsen at the northern frontier, a few on bamboo (17. IV. 1940).

Indo-China: Angkor, Cambodia, many on bamboo (23. IV. 1940).

Many females were found on bamboo also at Hongkong (8. III. 1940). In some specimens marginal paired pores reduced in number, and in old females anterior half of body selerotised, with the posterior half retracted.

Lecaniodiaspis cremastogastri TAKAH. var. **foochowensis** TAKAH.

Peking Nat. Hist. Soc. Bull., X, p. 217 (1936).

Thailand: Mt. Sutep, many on *Quercu* (12. IV. 1940), protected by *Crematogaster.*

This variety differs from the typical form in the cribriform plates more in number and in 2 pairs of groups, each group with 5–12 plates. One or 2 cribriform plates sometimes present in front of the anterior group of the plates. Anterior stigmatic clefts with 2 spines, one of which is much shorter and rounded apically; they are variable in shape and size, and one of them is sometimes pointed. Caudal bilobed plate reticulate on the lateral part, with a pair of setae at the median narrowed part. Marginal setae of body simple, somewhat or a little curved on the distal part.

Subfamily **Coccinae**

Coccus hesperidum L.

Thailand: Chiengmai, some on *Citrus* (7. IV. 1940).

Coccus punctuliferum GREEN.

Cocc. Ceylon, III, p. 205 (1904); TAKAHASHI, Dept. Agr. Research Inst.

Formosa, Rept. no. 40, p. 51 (1929); GREEN, Ceylon Jl. Sc. B, XX, p. 300 (1937).

Thailand: Bangkok (III. and IV. 1940), Lampoon (IV. 1940), Chiengmai (IV. 1940); common on *Butea frondosa*, mango, a legume, *Ficus* sp., etc.; sometimes protected with shelters by ants.

Marginal setae mostly a little forked apically, somewhat longer than the shorter stigmatic spines, but shorter than the longer stigmatic spines. Derm scarcely or slightly sclerotised around the anal plates. Sometimes found intermixed with *Xenolecanium mangiferae* n. sp. on mango.

Coccus elongatus SIGNT.

Thailand: Bangkok, on *Anona* (III. 1940); Chiengmai, common on *Samanea saman* (IV. 1940); Mt. Sutep (IV. 1940).

Coccus mangiferae GREEN.

Thailand: Bangkok, a few (30. III. 1940); Chiengmai, many on *Ficus* sp. (7. IV. 1940).

The adult females are well developed, measuring about 4 mm. in length (anal plates 0.28 mm. long, 0.083 mm. wide), with a small longitudinal group of pores at the median area of dorsum in front of the anal plates; the group narrower than, and as long as half the length of, the plates; the pores almost similar to other dermal ones. Apparently different from *C. diversipes* CKLL. in the larger dorsal pores, the very short band of pores in front of the anal plates, and in other characters.

Coccus viridis GREEN.

Thailand: Chiengmai, abundant on *Ixora*, *Gardenia*, *Citrus* and *Achras zapota* (IV. 1940); Chiengrai near the northern frontier, abundant on *Citrus* (17. IV. 1940); Mt. Sutep, host unknown (5. IV. 1940).

Indo-China: Angkor, Cambodia, host undetermined (24. IV. 1940).

Coccus acutissimus GREEN.

Cocc. Ceylon, III, p. 218 (1904); TAKAHASHI, Dept. Agr. Research Inst. Formosa, Rept. no. 40, p. 53 (1929); RAMAKRISHNA Ayyar, Imp. Inst. Agr. Res. Pusa, Bull. 197, p. 48 (1929).

Thailand: Mt. Sutep, a few on an undetermined tree (11. IV. 1940).

In Formosa this coccid occurs on *Artocarpus*, *Euphoria*, *Eugenia*, *Michelia* and *Machilus*, and was found in the mountainous regions too.

Coccus cambodiensis n. sp.

(Adult female) Yellow. Body oval, distinctly longer than wide, not strongly sclerotised, with no abdominal segments distinct. Antennae short,

somewhat tapering, a little longer than the hind leg, constricted at the tip, much shorter than the distance between themselves; the 1st segment distinct, but the remaining segments fused together, with some long setae at the tip. Legs much reduced in size; coxae distinct, but other segments not distinct or entirely fused together; hind femora somewhat longer than wide; tibio-tarsi longer than the femur, tapering; tarsi very short, much smaller than the tibia, with the digitules scarcely capitate; claws small, ungual digitules sometimes not discernible. Stigmatic clefts very shallow, with a long stout spine and 2 very short spines closely placed; the long one bluntly pointed or rounded apically, not or slightly curved, a little longer than the marginal setae; the small ones rounded apically, a little longer than wide. About 15–20 pores in a row between the spiracle and the cleft. Margin thin; marginal setae short, fine, not branched, a little curved, not numerous, in a row, mostly much shorter than the spaces between them. Dorsum rather densely with pale irregular reticulations almost over the whole surface, many very small circular translucent areas sparsely scattered, some very small stiff setae, many minute fine setae in a single row along the margin, and 14 submarginal minute tubercles in a row; the stiff setae blunt apically, not widened towards the base, much fewer than the translucent areas, present in a pair of longitudinal loose rows on the median area (about 10 in each row) and in an irregular row on the submarginal area on each side. Anal plates stout, about twice as long as wide, rounded at the lateral angle, bluntly pointed at the apex, with a few long setae on the distal part; the latero-posterior margin not rounded, as long as, or somewhat longer than, the latero-anterior margin. Anal cleft closed. Venter with 3 pairs of long setae in front of the anal plates, but no setae between the antennae;

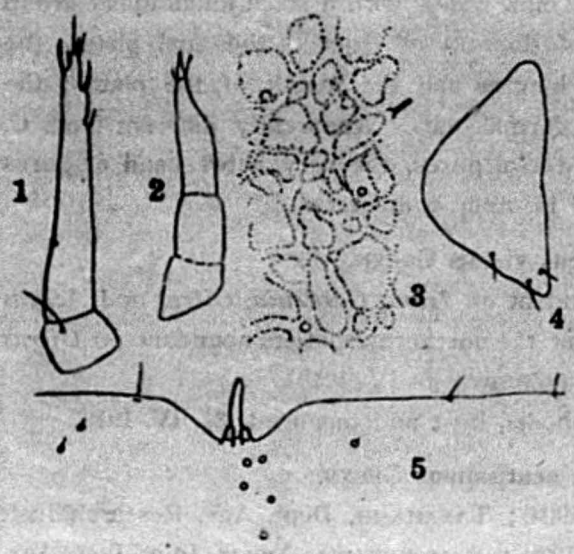

Fig. 8.
Coccus cambodiensis n. sp.
Adult female.
1. Antenna. 2. Hind leg. 3. Dorsal reticulations and seta. 4. Anal plate. 5. Stigmatic cleft and margin.

many very short simple setae and very few pores present anterior to the anal plates. Body 2–2.5 mm. long, 1.7 mm. wide, antenna 0.15–0.155 mm., hind leg 0.1–0.11 mm., long stigmatic spine 0.028 mm., anal cleft 0.35 mm., anal plate 0.115 mm. long, 0.06 mm. wide, dorsal stiff seta 0.009–0.014 mm., marginal seta 0.023 mm.

Indo-China: Angkor, Cambodia, some on *Ficus* sp. (24. IV. 1940).

Characterised by possessing pale irregular reticulations on the dorsum, the legs reduced in size, the shorter stigmatic spines very small and rounded apically, and by the presence of minute submarginal setae in a row.

Lecanium formicarii GREEN.

Cocc. Ceylon, III, p. 190 (1904); TAKAHASHI, Dept. Agr. Research Inst. Formosa, Rept. no. 40, p. 58 (1929); RAMAKRISHNA AYYAR, Imp. Inst. Agr. Res. Pusa, Bull. 197, p. 47 (1929); FERRIS, Microent., I, p. 14 (1936).

(Adult female) Body not strongly sclerotised, not more sclerotised around the anal plates and stigmatic clefts. Claws short, with no denticle. Stigmatic clefts not sclerotised, with 3–6 spines, which are sometimes short and subequal in length, but usually one of which is longer, and as long as, or shorter than, the marginal setae. Many pores mostly in an irregular row between the spiracle and the cleft. Marginal setae many, long, thin, especially so on the distal one-third or half, simple, mostly curved, in a row, longer than the spaces between them. Anal plates minutely reticulate on the basal part of mesal side, with a few long setae on the distal part. Anal ring below the plates. Dorsum with many small areolations scattered, very small simple setae in a row along the margin, and with some long thin setae very sparsely scattered, which are as long as, or shorter than, the marginal setae. Venter with very minute short thin tubular ducts very sparsely present; abdominal segments discernible. Body 2.3–2.75 mm., anntenna 0.23 mm., hind tibia 0.092 mm., longer marginal seta 0.042–0.046 mm., anal cleft 0.32 mm., anal plate 0.18 mm.

Thailand: Chiengmai, Mt. Sutep, Payao near Chiengrai (IV. and V. 1940); many on mango, *Euphoria longana* and some undetermined trees; protected with shelters by *Crematogaster* and other ants.

Differentiated easily from *Coccus tumuliferus* MORRISON by the anal plates destitute of many setae.

Eucalymnatus tessellatus SIGNT.

Thailand: Chiengmai, a few on *Calophyllum* and *Euphoria longana* (IV. 1940).

Megalocryptes n. g.

(Adult female) Oval or subcircular, convex dorsally, with no abdominal segments, not covered with wax. Antennae developed. Legs developed; tarsi with capitate digitules, lacking a thickening at the base; claws with capitate setae, with no denticle. Stigmatic clefts strongly sclerotised on the well-defined marginal area, with many pores and spines on it. Margin with setae in a row. Anal cleft entirely fused together, with no trace of division. Anal plates not elongated. Dorsum with areolations. Venter with very small tubular ducts.

Type—*Megalocryptes buteae* n. sp.

This genus resembles *Crypte*s CKLL. et PARROTT in the anal cleft entirely fused, but differs in the stigmatic clefts being prominent, sclerotised on the marginal area and with many pores and spines on it. *Lecanium bambusicola* GREEN may be included in this genus.

Magalocryptes buteae n. sp.

(Adult female) Yellowish brown, shining, with a small black patch on the median area in dried specimens, not covered with wax. Body very large, broadly elliptical or subcircular, sometimes narrowed anteriorly, much convex dorsally, lacking indentations on the margin, with an indistinct shallow median ridge, not strongly sclerotised, without segments. Eyes absent. Antennae 7 or 8-segmented, much shorter than the distance between themselves; the 2nd and 4th or 5th segments with a long seta; relative length of segments about as follows; I-10, II-7-8, III-14-15 (10+5), IV-9-14, V-5-8, VI-7-8, VII-10. Tibiae with a very long fine seta on the distal part; hind tarsi as long as, or slightly longer than, the tibia, slender, somewhat swollen on the basal part, with no thickening on the basal part, distinctly jointed; tarsal digitules very long, capitate; claws short, with no denticle, ungual digitules stout, expanded and rounded apically. Spiracles much expanded at the apex, less so basally, the diameter at the apex longer than the length of spiracle; many pores present in a group between the spiracle and the cleft. Stigmatic clefts deep, sometimes closed, strongly sclerotised on the defined marginal area, with many (about 30 in a specimen) small circular pores and 3 spines on the sclerotised area; the spines equal in length, widely apart, not tapering, rounded or bluntly pointed apically, nearly as long as the marginal setae, not reaching the margin, slightly curved. Marginal setae in a row, straight or slightly curved, not sharply pointed, or blunt apically, simple, somewhat widened towards the

base, a little variable in length, as long as, or longer or shorter than, the spaces between them. Anal plates about twice as long as wide, rounded at the lateral angle, bluntly pointed at the tip, rounded, but distinctly sinuate on the latero-posterior margin near the apex, with corrugation-like markings, and about 3 rather long dorsal setae on the distal part; the latero-anterior margin a little longer than the latero-posterior margin; derm strongly sclerotised widely around the anal plates. Anal cleft entirely fused together, with no trace of separation. Dorsum densely with many large areolations, which are mostly oval or subcircular and more distinct on the marginal area; submarginal tubercles absent; numerous minute circular pores present in 3 large longitudinal groups on the dorsum in front of the anal plates, the middle group shorter, with smaller and fewer pores; the pores not translucent, protruding, rounded, smaller than the ventral genital pores. Ventral setae very short, simple, sparse; about 7 pairs of very long setae present on the median area of abdomen, 2 pairs of similar ones between the antennae; numerous pores around the anal plates; many very small slender tubular ducts scattered on the venter, which are with a long

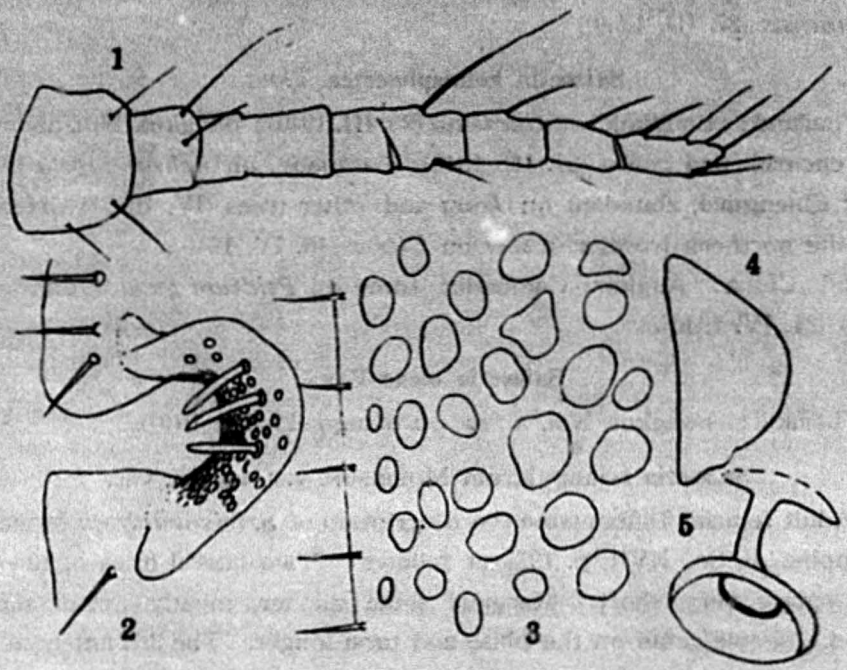

Fig. 9.
Megalocryptes buteae n. sp.
Adult female.
1. Antenna. 2. Stigmatic cleft. 3. Marginal area of dorsum.
4. Anal plate. 5. Spiracle.

tube, with a rounded end. Anal ring below the anal plates, with 8 stout setae. Body 4–6 mm. long, 3–4.3 mm. wide, antenna 0.32 mm., hind femur and trochanter together 0.21 mm., hind tibia 0.125 mm., hind tarsus 0.13 mm., spiracle 0.11 mm. wide at tip, marginal seta 0.023–0.046 mm. (mostly 0.032–0.037 mm.), anal plate 0.18 mm. long, 0.092 mm. wide.

Thailand: Bangkok, a few (24. and 28. III. 1940); Chiengmai, many (IV. 1940); Lampoon, many (3. IV. 1940); Mt. Sutep, a few (14. IV. 1940); very common in the northern part on *Butea frondosa, Zizyphus jujuba, Serbania glandiflora*, and mango, attacking the branch; a few on *Quercus*.

A single specimen was collected also on bamboo at Chiengmai (IV. 1940), which is much smaller, measuring about 2.85 mm. in length, and subcircular, but can not be distinguished from the present species. Different from *Lecanium bambusicola* GREEN in the much longer legs and antennae, the presence of 3 spines in the stigmatic clefts, and in other characters.

Saissetia nigra NIETNER.

Thailand: Chiengmai, abundant on cotton, a few on *Anona* (IV. 1940); Korat, abundant on *Ficus* sp. (5. V. 1940); Bangkok Noi, many on *Hibiscus rosa-sinensis* (27. III. 1940).

Saissetia hemisphaerica TARG.

Thailand: Bangkok, on *Gardenia* (29. III. 1940); Bangkok Noi, abundant on a cucurbit and coffee (27. III. 1940); Lampoon, on *Achras zapota* (3. IV. 1940); Chiengmai, abundant on *Ixora* and other trees (IV. 1940); Chiengrai near the northern frontier, a few on *Citrus* (16. IV. 1940).

Indo-China: Angkor, Cambodia, some on *Psidium guyava* and other plants (24. IV. 1940).

Saissetia oleae BERN.

Thailand: Bangkok Noi, a few on mango (27. III. 1940).

Saissetia triangularum MORRISON, var. **laos** n. var.

(Adult female) Differs from the description of *S. triangularum* MORRISON (Philippine Jl. Sc., XVII, p. 197) as follows: Two lateral ones of the stigmatic spines very short. Marginal setae thinner, mostly not or slightly curved. Simple setae on the tibiae and tarsi longer. The 3rd antennal segment shorter. Anal plates slightly narrower. Anal cleft longer, about twice –2.5 times as long as the anal plates. Submarginal dorsal tubercles only about 5 on each side.

Thailand: Mt. Sutep, 2 females on *Machilus* sp. (leaf) (9. IV. 1940).

Differentiated from the typical form by the much fewer submarginal tubercles.

Platylecanium citri n. sp.

(Adult female) Asymmetrical, nearly straight on one lateral margin, but broadly rounded on the other margin, flattened, not so strongly sclerotised, as in *P. asymmetricum* MORRISON in shape, but much wider. Eye spots distinct, placed far within the margin. Antennae rudimentary, mesad of the eye spots, about twice as long as wide, not segmented, with about 5 rather long setae on the distal part. Legs wanting. Spiracles slender on the stalk, longer than wide, expanded distally, the diameter of apex smaller than the eye spots; many pores in a single row between the spiracle and the cleft. Stigmatic clefts deep, sclerotised on the margin, with 3 stout spines, which are not tapering, rounded apically, slight curved, much longer than the marginal setae, and not reaching the body margin; the middle one a little longer than, and mesad of, the other 2; a distinct furrow running mesad from each cleft. Margin not crenate; marginal setae very short, thin, curved, simple, sparsely arranged in a row, much shorter than the spaces between them. Anal plates narrow, over thrice as long as wide, obtuse at the lateral angle, acute apically, straight on the latero-anterior and latero-posterior margins, the former a little shorter than the latter. Dorsum with many rather small, faint, oval or subcircular, areolations densely on the submarginal area, many of which are in crowded rows, and with many minute black tubercles mostly in rows, which are expanded basally, truncate at the tip, and longer than in *P. asymmetricum* MORRISON, each with a small simple thin seta. Venter with many pores beneath the anal plates and some similar ones in a small longitudinal group laterad of the plates. Body 4 mm.

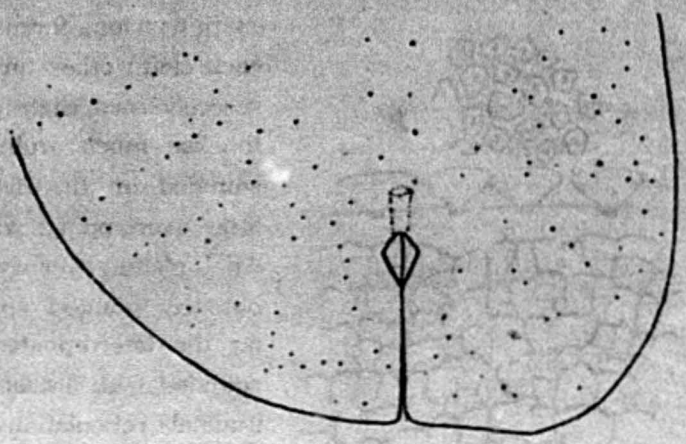

Fig. 10.
Platylecanium citri n. sp.
Adult female.
Dorsum of posterior part, showing distribution of minute tubercles.

long, 2.75 mm. wide, antenna 0.04 mm., anal cleft 0.51 mm., stigmatic spine 0.037 mm., anal plate 0.23 mm. long, 0.065 mm. wide, marginal seta 0.012 mm.

Thailand: Bangkok Noi, a few on *Citrus* (30. III. 1940).

Related to *P. asymmetricum* MORRISON, but differs as follows: Body wider, with oval dermal areolations. Body margin smooth, not dentate. Anal plates narrower. Different from *P. cribrigerum* CKLL. et TOBIN. in the much narrower anal plates and in other structures; from *P. pseudexpansum* GREEN in the narrower body, the shorter marginal setae, the antennae much reduced in size, etc., and from *P. fusiforme* GREEN and *P. cocotis* LAING in the shape of body and in other characters.

Paralecanium angkorense n. sp.

(Adult female) Pale brown, slightly grayish. Subcircular, slightly longer than wide, not indented at the clefts. Eye spots distinct, not surrounded with a darker area. Antennae not discernible. Legs absent. Spiracles stout, gradually widened towards the base, expanded at the apex, the apex nearly as wide as the base. Stigmatic clefts small, deep, somewhat sclerotised on the margin, lacking denticles, with 3 spines, which are subequal in length, not tapering, blunt apically, slightly curved, and not reaching the margin; a long furrow running mesad from each cleft; other furrows absent. Margin scarcely or slightly crenate; marginal fobellae much wider than long, broadly rounded on the distal margin, not or a little overlapping, with no basal tubercle. Anal plates over twice as long as wide, obtusely pointed apically, slightly sinuate on the latero-posterior margin, not surrounded with a sclerotised area, with longitudinal reticulations, the latero-anterior margin straight, nearly as long as the latero-posterior. Anal ring in front of, and far apart form, the anal plates, with long bristles reaching beyond the middle of the plates. Dorsum with a rather wide marginal area, which is distinctly defined, pale, and with many thin linear markings forming reticulations, the remaining median

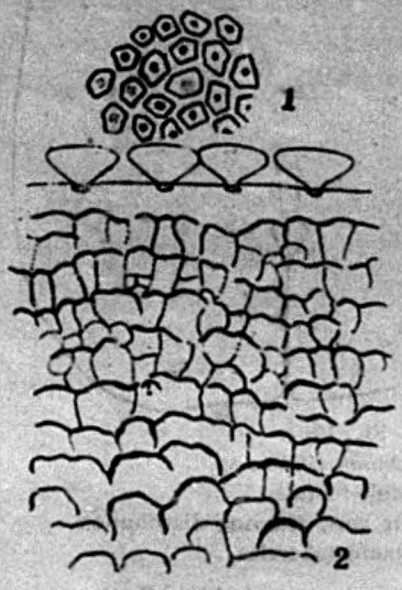

Fig. 11.
Paralecanium angkorense n. sp.
Adult female.
1. Areolations on dorsum.
2. Marginal area of dorsum.

area of dorsum more sclerotised, very densely with many very small distinct polygonal areolations except on many small scattered parts, which parts are larger than the areolations, but much smaller than the eye spots, and subcircular or elongate; some minute black spots scattered on the marginal part of the median area, especially on the posterior part, and on the posterior marginal area, each of which is with a minute seta. Many pores clustered beneath the anal plates, and present at least in 2 pairs of narrow groups latero-anterior to the genital cluster. Body about 4 mm., anal plate 0.24 mm. long, 0.088 mm. wide, anal cleft 0.6 mm., marginal defined area of dorsum 0.28 mm. wide, marginal fobella 0.042 mm. wide.

Indo-China: Angkor, Cambodia, 2 specimens (24. IV. 1940), host an undetermined tree.

This species is characterised by the presence of a rather wide well-defined marginal area on the dorsum and by the small dense polygonal areolations on the median area of dorsum.

Ctenochiton crematogastri n. sp.

(Adult female) Black, somewhat brownish, strongly sclerotised, wide, irregular in shape, sometimes wider than long, with shallow irregular indentations on the margin, convex dorsally, without ridges. Antennae developed, 7 or 8-segmented, nearly as long as the distance between themselves; the last segment short, a little longer than the 7th in the 8-segmented ones; relative length of segments about as follows: I-8, II-10, III-12, IV-13, V-15, VI-8, VII-7, VIII-10. Femora and trochanters together shorter than the tibia and tarsus together; tibiae longer than the tarsus; tarsi with no sclerotised part at the base, with long rather thin capitate digitules; claws short, ungual digitules not so stout, much expanded at the tip. Spiracles rather slender on the stalk, much expanded at the apex, less so basally; about 6 dermal pores present near the orifice; very few pores between the spiracle and the cleft. Stigmatic clefts very shallow, indistinct, often obscured, with spines, which are usually not differentiated from, and in a continuous series of, the marginal spines, but sometimes a spine is longer than other marginal ones and a little curved; about 6 or 7 pores sometimes present in a group near the cleft. Marginal spines slender, slightly or a little tapering, sharply pointed apically, not curved, very slightly expanded basally, very densely in a row along the whole margin, but sometimes in irregular double rows at some parts, a little variable in length, some of them near the anal cleft sometimes longer and filiform. Anal plates rounded on the

lateral margin, bluntly pointed apically, about twice as long as wide, with 3 setae on the dorsum; venter of body a little more sclerotised along the anterior parts of the plates. Anal opening at the anterior ends of the plates. Dorsum densely with distinct oval or subcircular areolations like *Saissetia nigra* NIETN.; many short simple setae sparsely scattered. Venter with many small slender tubular ducts, and setae more in number and longer near the margin; abdominal segments discernible. Body 3-4 mm., antenna 0.37-0.4 mm., fore femur and trochanter together 0.14 mm., fore tibia 0.12-0.13 mm., fore tarsus 0.092 mm., anal plate 0.23-0.24 mm. long, 0.12 mm. wide, anal cleft 0.92 mm., marginal spine 0.032-0.045 mm.

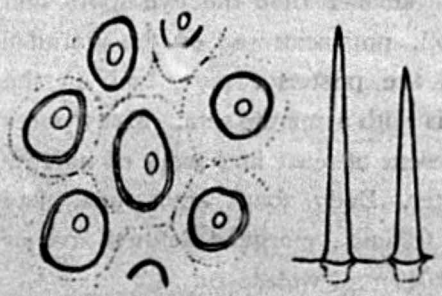

Fig. 12.
Ctenochiton crematogastri n. sp.
Adult female.
Dorsal areolations and marginal spines.

Thailand: Mt. Sutep, many on *Quercus* sp., attacking the branch (12. IV. 1940); always protected with shelters by *Crematogaster*.

Closely related to *Ctenochiton armatus* TAKAH. (*Saissetia armata* TAKAH.), but the marginal spines more slender and longer in this new species. These coccids are with dorsal areolations like *Saissetia*, and are not typical forms of *Ctenochiton*. *C. armatus* TAKAH. is apparently closely related to the species described as *C. cinnamomi* by GREEN and may be identical with it. *Saissetia auriculata* MORRISON has also marginal spines similar in shape to those of *C. armatus* TAKAH., and *Hemilecanium coriaceum* HALL may be a related form.

Xenolecanium n. g.

(Adult female) Body wide, a little convex dorsally not covered with wax, without abdominal segments discernible. Antennae and legs rudimentary. Stigmatic clefts widely sclerotised on the marginal area, with 3 spines and many pores. Margin crenate, with long simple setae; marginal area sclerotised. Anal cleft distinct. Anal plates normal in shape, surrounded with a sclerotised area. Dorsum with many pores, and a small median sclerotised area, which is with areolations. Venter with minute tubular ducts.

Type—*X. mangiferae* n. sp.

Related to *Alecanium* MORRISON, but differs in the anal plates being stouter and destitute of many setae, the stigmatic clefts prominent and with

spines, and in the dorsum with a median areolated plate. Much different from *Ctenochiton* MASK. in the crenate margin, the long marginal setae, and in the stigmatic clefts with a sclerotised plate.

Xenolecanium mangiferae n. sp.

(Adult female) Blackish brown, shining, but yellowish brown in some dried specimens, wide, irregular in shape, but generally ovate, a little longer than wide, flattish, a little convex dorsally, sclerotised especially on the marginal area, and around the anal plates and the stigmatic clefts; no body segments discernible. Antennae rudimentary, not or 2-segmented, longer than wide, smaller than the spiracles, with 6 or 7 long setae on the distal part. Legs rudimentary, represented by mere very short conical protuberances, which are small, much smaller than the distal part of spiracle, and pointed at the apex, with some setae. Spiracles longer than wide, distinctly nearer to the clefts than to the median line of body, much constricted at the middle, short on the stalk, the apex nearly as wide as the base. A rather wide fold present between the spiracle and the cleft like some larvae of Aleyrodidae, which is provided with many pores sparsely scattered.

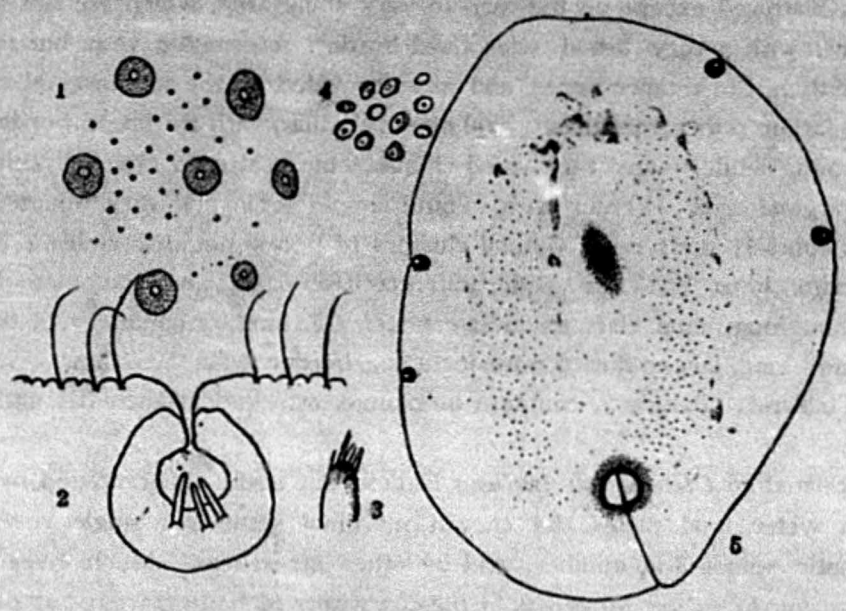

Fig. 13.
Xenolecanium mangiferae n. sp.
Adult female.
1. Dorsal pores. 2. Margin and stigmatic cleft. 3. Antenna.
4. Areolations on median sclerotised plate.
5. Body (variable in shape).

Stigmatic clefts prominent, almost or entirely closed, forming large rings within the body margin, widely sclerotised on the margin, with many pores, and 3 spines, which are subequal in length, not tapering, bluntly pointed, much shorter than the marginal setae, and not reaching the body margin; the pores not discernible in some specimens. Margin crenulate as in *Alecanium hirsutum* MORRISON and *Ctenochiton inclusus* GREEN, with many long rather fine setae, which are simple, curved distally, in a row, and much longer than the spaces between them; 2-5 (usually 2 or 3) crenulations present between the setae. Anal plates about twice as long as wide, much rounded at the lateral angle, blunt at the tip, surrounded with a sclerotised part and a thick rim, without many setae, the latero-anterior margin a little rounded, much longer than the latero-posterior margin. Anal ring beneath the bases of the plates. Anal cleft closed. Dorsum with a rather small longitudinal sclerotised plate above the mouth parts, which is with many dense small oval areolations, irregular in shape, and much longer than the anal plates; many minute circular pores present in a pair of large longitudinal groups, which are a little protruding and not transparent; some minute circular pores scattered on the submarginal area; many much larger pores scattered except on the median very small area, which are not translucent, with a very broad sclerotised border, intermixed with, but much fewer than, the smaller pores, and more crowded on the submarginal area; these larger pores translucent, oval or subcircular, with no broad border, in the young adult; many very small simple setae scattered especially on the submarginal area. Venter with minute simple setae and very minute thin ducts sparsely scattered. Genital clusters of pores not discernible. Body 3-3.4 mm. long, 2.5-3 mm. wide, antenna 0.055-0.064 mm., anal plate 0.16-0.17 mm. long, anal cleft excluding plates 0.55 mm., stigmatic fold 0.023-0.32 mm. long, larger dorsal pore including border 0.042-0.065 mm.

Thailand: Bangkok, common on mango, attacking branch (III. and IV. 1940).

Related to *Ctenochiton inclusus* GREEN, but easily differentiated by the much wider anal plates, the curved marginal setae in a single row, the stigmatic spines 3 in number, and by other structures. Much resembles *Alecanium hirsutum* MORRISON in the characters of body margin, but differs in some essential characters as pointed out in the generic diagnosis.

Paractenochiton n. g.

(Adult female) Body ovate, convex dorsally, strongly sclerotised, with no

segments. Antennae rudimentary. Legs absent. Stigmatic clefts sclerotised on the marginal area, far apart from the spiracles, with 3 spines. Marginal setae simple, in a row. Anal plates normal in shape, with many short dorsal setae. A 1 cleft distinct. Dorsum with many pores. Venter with minute tubular ducts.

Type—*P. sutepensis* n. sp.

Different from *Ctenochiton* MASK. in the stigmatic clefts sclerotised on the marginal area, the anal plates with many setae, the absence of legs, etc., and from *Cissococcus* CKLL. in the anal plates with many short simple setae, but not beset with spines, the prominent stigmatic depressions, and in other characters.

Paractenochiton sutepensis n. sp.

(Adult female) Black, strongly sclerotised, ovate, or irregular in shape, longer than wide, sometimes narrowed on the posterior part, rounded at the ends, strongly convex dorsally, with no segments discernible. Antennae rudimentary, not segmented, or faintly 2-segmented, longer than wide, with some setae on the distal part. Legs wanting. Spiracles very slender on the stalk, much widened at the tip, less so basally. A fold present between the spiracle and the cleft, which is with about 20 pores scattered. Stigmatic clefts prominent, deep, opening, sclerotised on the marginal area, with 3 spines, which are subequal in length, not tapering, bluntly pointed, slightly curved, longer than the marginal setae, and not reaching the body margin. Marginal setae short, thin, simple, mostly curved, numerous, as long as, or somewhat longer than the spaces between them. Anal plates about twice as long as wide, rounded at the apex, blunt at the lateral angle, corrugated, broadly rounded on the latero-posterior margin, not surrounded with a distinct ventral sclerotised band, each

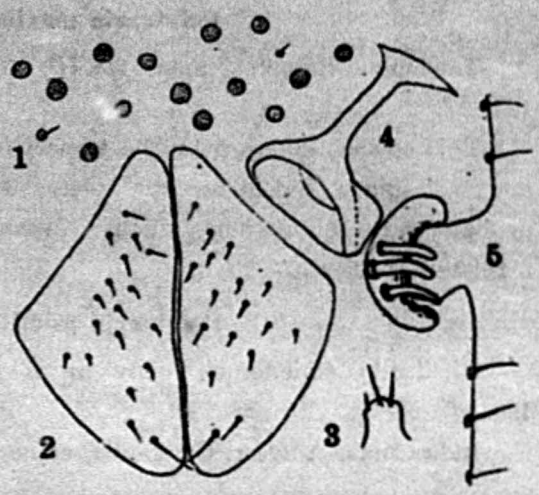

Fig. 14.
Paractenochiton sutepensis n. sp.
Adult female.
1. Dorsal pores and setae in longitudinal groups.
2. Anal plates. 3. Antenna. 4. Spiracle.
5. Margin and stigmatic cleft.

with about 15–20 short thin simple setae scattered on the dorsum except on the marginal area, the latero-anterior margin almost straight, nearly as long as the latero-posterior margin; ventral derm sclerotised around the plates. Anal ring at the bases of the plates. Anal cleft closed. Dorsum with many minute translucent pores sparsely scattered, which are not distinct in some specimens; numerous larger, but small, circular intranslucent pores in a pair of large longitudinal groups on the submedian area, which pores are prominent in the young adult, but indistinct in some old ones, protruding, rounded, and nearly as large as the pores on the ventral genital area; a few minute setae intermixed with the pores. Venter with many minute short tubular ducts, about 12-15 pores in a group on each side of the anal plates, and 24-28 similar pores in an irregular row in front of the plates; 3 pairs of fine setae in front of the anal plates not so long. Body 3 mm. long, 2.0–2.5 mm. wide, anal plate 0.15 mm. long, 0.078 mm. wide, marginal seta 0.018–0.023 mm., stigmatic spine 0.037 mm., anal cleft 0.69 mm.

Thailand: Mt. Sutep, many on *Quercus*, attacking the branch (12. IV. 1940); protected with shelters by *Crematogaster*, usually found intermixed with other coccids.

This species is easily recognized by the presence of many short setae on the anal plates.

Pulvinaria maxima GREEN.

Thailand: Bangkok, many (28. III. 1940); Korat, many on *Anona* (5. V. 1940).

This species differs from the typical forms of *Pulvinaria* in the truncate marginal spines and in the anal plates with truncate and flattened spines, probably representing a new genus. *Lecanium inopheron* LAING is apparently a related species.

Pulvinaria psidii MASKELL.

Thailand: Chiengmai, many on *Euphoria longana* and *Ficus* sp. (IV. 1940).

Indo-China, Angkor, Cambodia, some on *Psidium guyava* (24. IV. 1940).

Ceroplastes ceriferus AND.

Thailand: Chiengmai, a few on *Euphoria longana* (10. IV. 1940).

The adult females are very large, with a very long caudal process.

Ceroplastes rubens MASKELL.

Thailand: Mt. Sutep, a few on *Euphoria longana* (5. IV. 1940).

Vinsonia stellifera WESTW.

Thailand: Bangkok, a few on mango (30. III. 1940).

Subfamily **Diaspidinae**

Chionaspis graminis GREEN, var. **divergens** GREEN.

Cocc. Ceylon, II. 123 (1899).

Thailand: Chiengsen at the northern frontier, many on a grass (17. IV. 1940).

Chionaspis lithocarpi n. sp.

(Adult female) Scale narrow, slightly widened posteriorly, white, with pale yellow larval skins. Body narrow, a little widened posteriorly, with a pair of longitudinal groups of spines on the venter of thorax, the groups not reaching the posterior spiracles, the spines sharply pointed, much expanded basally, mostly longer than wide, sclerotised. Abdominal segments with many small lateral gland ducts, which are longer on the posterior segments, but smaller than the marginal ones on the pygidium; some dorsal gland ducts in rows on the posterior segments, which are as large as those on the pygidium; a few lateral or sublateral conical gland spines on the segments. Anterior spiracles with 2 pores, posterior spiracles without them. Pygidium tapering, with the anal opening much nearer to the base than to the apex. Median lobes large, stout, protruding, confluent basally, not notched, wider than long, broadly rounded on the distal margin, a little diverging; other lobes wanting. Marginal gland spines very long, 4 on each side. Marginal gland ducts normal in shape, 7 on each side. Dorsal gland ducts a few, a little longer than wide, shorter than the marginal ones. Circumgenital pores in 5 groups, 4 in the anterior group, numerous in other groups. Body about 1.1 mm.

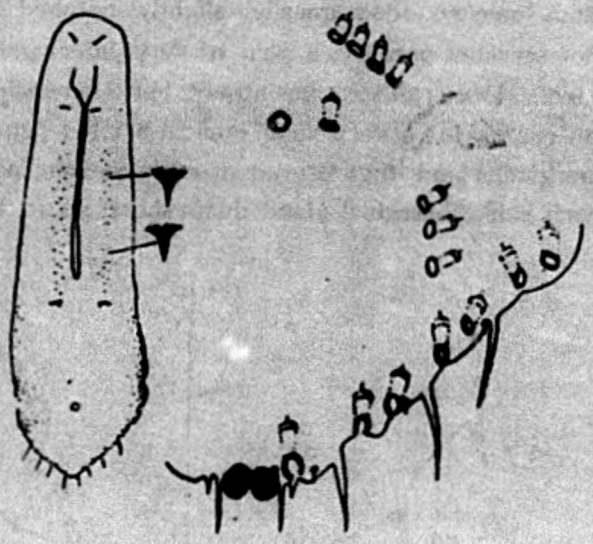

Fig. 15.
Chionaspis lithocarpi n. sp.
Adult female.
Body and pygidium.

Thailand: Mt. Sutep, a few on the lower side of the leaf of *Lithocarpus* sp. (1. IV. 1940).

This species is characterised by the presence of a pair of longitudinal groups of spines on the thorax, and by the stout median lobes.

Chionaspis lithocarpicola n. sp.

(Adult female) Scale narrow, a little widened posteriorly, convex, white, about 1 mm. long; larval skins pale yellowish brown. Body elongate, somewhat widened posteriorly, not convex laterally on the segments. Metathorax and abdominal segments with 2-6 small sublateral gland ducts, the latter with about 2 small pointed conical sublateral gland spines. Antennae widely apart, nearly on the front, with a long curved seta. Anterior spiracles with a pore. Pygidium much wider than long, not incised at the hind end, with the anus near the base. Median lobes rather large, stout, protruding, wider than long, rounded apically, slightly notched on each side near the apex, not serrate, parallel; a pair of very small pointed processes between the median lobes; other lobes absent, but 2 very short wide fimbriated processes on each side; a very small conical pointed process present at the tip of the marginal gland duct laterad of each median lobe. Gland spines long, 4 on each side. Marginal gland ducts short, stout, 4 on each side. Dorsal ducts

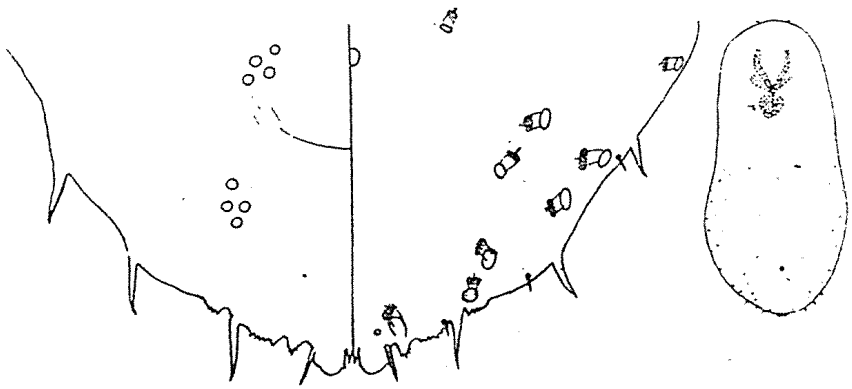

Fig. 16.
Chionaspis lithocarpicola n. sp.
Adult female.
Pygidium and body.

very few, in 2 rows, about 2 in each row, sometimes somewhat larger than the marginal ones, short, stout. Circumgenital pores in 5 groups, 2-4 in the median group, 4-6 in the latero-anterior groups, 4 in the latero-posterior. Body about 0.78 mm. long, 0.25 mm. wide.

Thailand: Mt. Sutep, many on the lower side of the foliage of *Lithocarpus* sp. (12. IV. 1940).

This species is characterised by the very few dorsal gland ducts on the pygidium, the antennae situated nearly on the front margin, the large median lobes and the presence of 2 very short wide fimbriated processes on each side of pygidium.

Phenacaspis dilatata GREEN.

Thailand: Bangkok, some on a palm and other trees (III. 1940); Mt. Sutep, some on a tree of the Lauraceae and other plants (IV. and V. 1940).

Indo-China: Angkor, Cambodia, some on palms (24. IV. 1940).

Phenacaspis vitis GREEN.

Cocc. Ceylon, II, p. 140 (1899); GREEN, Tijds. v. Ent., LXXIII, p. 295 (1930).

Thailand: Ubon, abundant on the leaves of an undetermined tree (4. V. 1940).

Phenacaspis hedyotidis GREEN.

Cocc. Ceylon, II, p. 142 (1899); GREEN, Ceylon Jl. Sc., B, XX, p. 318 (1937).

Thailand: Ubon, many on a tree of the Lauraceae ? (4. V. 1940).

The specimens differ from the original description in the thicker scale not semitransparent and not revealing the body beneath. Closely related to *P. vitis* GREEN, but differs in the narrower body, the apical part of pygidium scarcely protruding, and in the median lobes sunk into the margin.

Phenacaspis megaloba GREEN?

Cocc. Ceylon, II, p. 149 (1899).

Thailand: Chiengmai, a few on *Ficus* sp. (2. IV. 1940).

The specimens are colasped and identified with doubt.

Phenacaspis papayae n. sp.

(Adult female) Scale elongate, a little widened posteriorly, white, with pale yellowish brown larval skins, about 2.7 mm. long. Body narrow, slightly widened posteriorly, with or without a small conical sublateral spine on the prothorax, which is sharply pointed; mesothorax with some small lateral gland ducts and 1 or 2 similar sublateral spines; metathorax with

many lateral gland ducts and 4 sublateral spines, the ducts somewhat larger than those on the mesothorax, but as large as, or slightly smaller than, those on the abdomen, wider than long; the 1st abdominal segment with about 7 lateral ducts and 5 sublateral spines; the 2nd and 3rd with a few lateral ducts and some similar dorsal ones in a row on the lateral part; the 2nd with 5 sublateral spines; the 3rd with 3 or 4 longer lateral ones. Anterior spiracles with about 6 pores in a very dense group. Pygidium tapering, with the anus nearer to the base than to the apex. Median lobes rather large, stout, much longer than wide, rounded apically, distinctly serrate, a little diverging, with a pair of setae between them, the space between the median lobes at the middle slightly wider than the lobes; the 2nd lobes divided, the inner lobules rounded, a little longer than wide, not notched, much narrower than the median lobes; other lobes wanting. Gland spines long, 6 or 7 on each side. Marginal gland ducts rather stout, 6 or 7 on each side. Dorsal gland ducts in 2 rows, some of which are shorter than wide. Circumgenital pores in 5 groups, 7 or 8 in the median group, 16–19 in the latero-anterior group, 19–23 in the latero-posterior. Body 1.2 mm. long, 0.46 mm. wide on mesothorax, 0.51 mm. wide on abdomen.

Thailand: Bankok, many on the leaf of papaya and on *Zizyphus jujuba* (IV. and V. 1940).

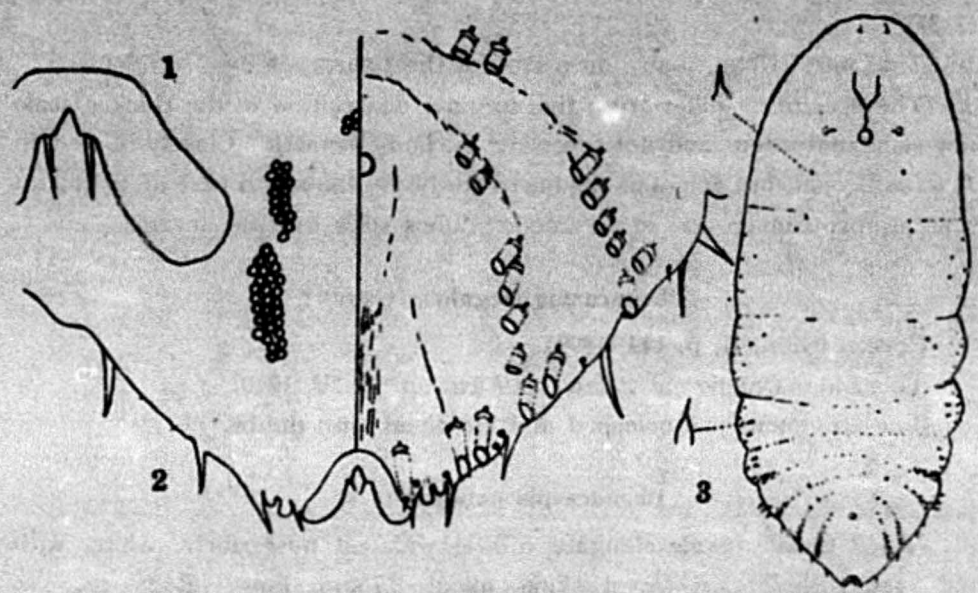

Fig. 17.
Phenacaspis papayae n. sp.
Adult female.
1. Median lobes. 2. Pygidium. 3. Body.

This species is characterised by the presence of sublateral spines on the anterior thoracic segments.

Closely related to *P. brideliae* TAKAH., but different in the larger median lobes, which are wider than the lobules of 2nd lobes, and in other characters. Related to *P. dilatata* GREEN, the scale and body, being, however, much narrower, and differentiated from *P. sozanica* TAKAH. by the median lobes more apart, with a pair of setae between them, and by other structures. The median lobes are similar to those of *Aulacaspis loranthi* GREEN (Jl. Bombay Nat. Hist. Soc., XIII, pl. F. fig. 26), but the 3rd lobes are entirely absent.

Unaspis acuminata GREEN.

Cocc. Ceylon, II, p. 136 (1899).

Thailand: Mt. Sutep, many on *Dipterocarpus* sp. (5. IV. 1940); Chiengsen, a few on mango (17. IV. 1940).

Pinnaspis aspidistrae SIGNT.

Thailand: Ubon, some on an undetermined tree (4. V. 1940).

Pinnaspis minor MASK.

Thailand: Bangkok, many on a garden plant (26. III. 1940).

Pinnaspis lithocarpi TAKAH., var. **siamensis** n. var.

(Adult female) Differs from the typical form (Bull. Ent. Res., XXII, p. 214) as follows: Pygidium with a very small blunt process at the hind end. Median lobes slightly smaller, a little separated, diverging on the mesal sides.

Thailand: Mt. Sutep, many on the lower side of the leaf of *Lithocarpus* sp. (9. IV. 1940).

This species is not a typical from of *Pinnaspis*, probably representing a new genus, but now retained in it.

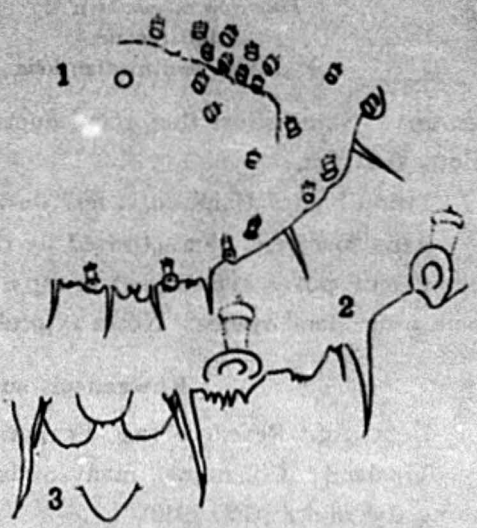

Fig. 18.
Pinnaspis lithocarpi TAKAH. var. *siamensis* n. var.
Adult female.
1. Pygidium. 2. Posterior margin of pygidium. 3. Process at hind end of pygidium.

Pinnaspis megaloba n. sp.

(Adult female) Body narrow, a little widened posteriorly, distinctly protruding laterally on the abdominal segments, with some rather long thin lateral ducts on the anterior 2 abdominal segments; the protruding part of the last abdominal segment narrower, with 2 similar ducts, 2 sublateral dorsal gland ducts present on the segment, which are similar to those on the pygidium. Pygidium tapering, with the anus near the apex. Median lobes large, united, protruding, not notched, slightly serrate on the lateral part; other lobes absent. Gland spines long, 4 on each side. Marginal gland ducts slender, about 7 on each side, the anterior one shorter. Dorsal gland ducts very few, only 2 on the submarginal area of basal part, shorter than the marginal ones. Circumgenital pores in 8 distinct groups, 4 in the anterior 4 groups, 8 or 9 in other groups. Some short thin gland ducts on the submarginal area of venter. Body 0.85 mm.

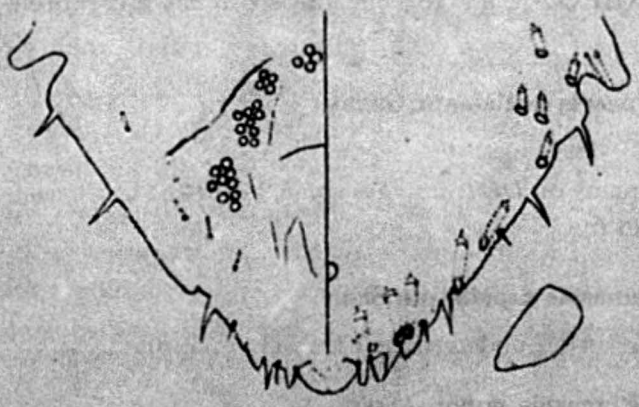

Fig. 19.
Pinnaspis megaloba n. sp.
Adult female.
Pygidium and median lobe.

Indo-China: Haiphon, a few on an orchind (30. VI. 1940).

This species is characterised by the large median lobes and by the circumgenital pores in 8 distinct groups. Resembles *Anoplaspis*, but pygidium with long gland spines. Not a typical form of *Pinnaspis*.

Kuwanaspis suishana TAKAH.

Dept. Agr. Research Inst. Formosa, Rept. 48, p. 16 (1930).

Thailand: Chiengmai, many on bamboo, attacking the lower side of leaf along the midrib (IV. 1940).

Hitherto known only from Formosa (Taihoku, Sozan, Suisha, Karenko). The scale of adult female with a long narrow white secretion behind the 2nd larval skin, when matured. The adult female very long, slender, with 2–4 lateral lobes in a row on each side of pygidium, which are only 2 in many of the specimens from Thailand.

Aulacaspis buteae n. sp.

(Adult female) Scale white. Cephalothorax distinctly wider than long, with or ithout a very shallow lateral protuberance, with a loose group of minute gland ducts on the sublateral area, each group with about 10–15 glands; a similar group also present at the posterior angle and on the side of metathorax; the 2nd and 3rd abdominal segments convex laterally, lacking dorsal gland ducts, the 2nd with a few small lateral ducts, the 3rd with about 7 lateral ducts and 3 short gland spines; the 4th with transverse rows of dorsal ducts and about 5 short lateral spines. Antennae somewhat nearer to the mouth parts than to the front margin, with a long bristle. Anterior spiracles with some pores in a group. Pygidium with the anus at the center. Median lobes large, much longer than wide, rather stout, narrowed distally, a little serrate, closely placed, much diverging on the distal halves; the space between them very narrow, much narrower than the lobes; the 2nd and 3rd lobes divided, not notched, not serrate, rounded apically; the inner lobules of the 2nd lobes extending to the apices of median lobes; the 3rd lobes slightly smaller than the 2nd; other lobes absent. Gland spines 6

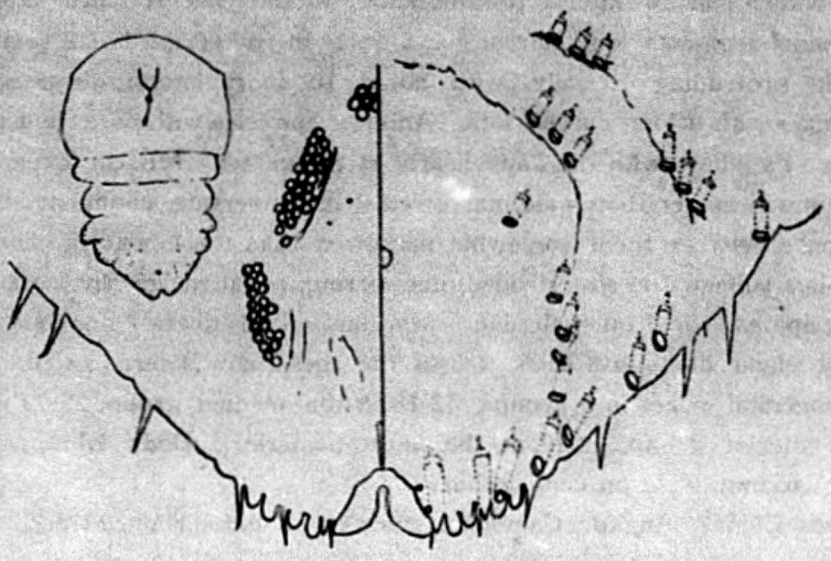

Fig. 20.
Aulacaspis buteae n. sp.
Adult female.
Body and pygidium.

on each side. Marginal gland ducts about 7 on each side. Dorsal gland ducts in 2 rows on each side, slightly smaller than the marginal ones, a duct also present above the lateral group of circumgenital pores. Circum-

genital pores in 5 large groups, 9–13 in the median group, 24–26 in the latero-anterior group, 17–19 in the latero-posterior. Body 1 mm. long, 0.65 mm. wide on cephalothorax.

Thailand: Chiengmai, many on *Butea frondosa* (2. IV. 1940).

Related to *A. rosae* BOUCHÉ, but the median lobes longer and more closely placed and the dorsal gland ducts fewer on the pygidium. Different from *A. cinnamomi* NEWST. in the shape of median lobes, the cephalothorax distinctly wider than long, as well as in other characters, and from *A. murrayae* and *A. phoebicola* TAKAH. in lacking dorsal gland ducts on the basal abdominal segments and in other structures.

Aulacaspis cambodiensis n. sp.

(Adult female) Scale subcircular, white, about 2 mm. in diameter; larval skins pale brown, at the front end of the scale; the 1st skin 0.32 mm. long; the 2nd skin about 0.83 mm. long, 0.62 mm., wide, a little protruding at the apex of pygidium, with the median lobes similar to those of the adult. Body rather stout, of normal shape; cephalothorax distinctly wider than long, with a shallow lateral protuberance; metathorax rounded laterally; abdominal segments with doreal gland ducts in rows; the last 2 segments a little protruding laterally, with about 10 short lateral gland spines. Antennae with a long curved seta. Anterior spiracles with pores in a dense group. Pygidium with the anus nearly at the center. Median lobes large, stout, much longer than wide, narrowed distally, serrate, confluent basally, the space between them somewhat narrower than the lobes; the 2nd and 3rd lobes subequal in size, divided, not serrate, rounded apically. Marginal gland spines 7 or 8 on each side. Marginal gland ducts 7 on each side. Dorsal gland ducts in 3 rows, 1–3 in the mesal row laterad of the anus. Circumgenital pores in 5 groups, 12–18 in the median group, 25–30 in the latero-anterior group, 13–19 in the latero-posterior. Body 1.1 mm. long, about 0.65 mm. wide on cephalothorax.

Indo-China: Angkor, Cambodia, many on an undetermined tree (24. IV. 1940).

Resembles *A. murrayae* TAKAH, differing, however, in the median lobes distinctly separated and not sinuate near the tip, the fewer gland spines, the absence of a sublateral group of many dorsal gland ducts on the abdominal segments, etc., and differentiated from *A. buteae* n. sp. by possessing transverse series of dorsal gland ducts on the basal abdominal segments and by the median lobes widely apart; and from *A. crawii* CKLL. by the shape of

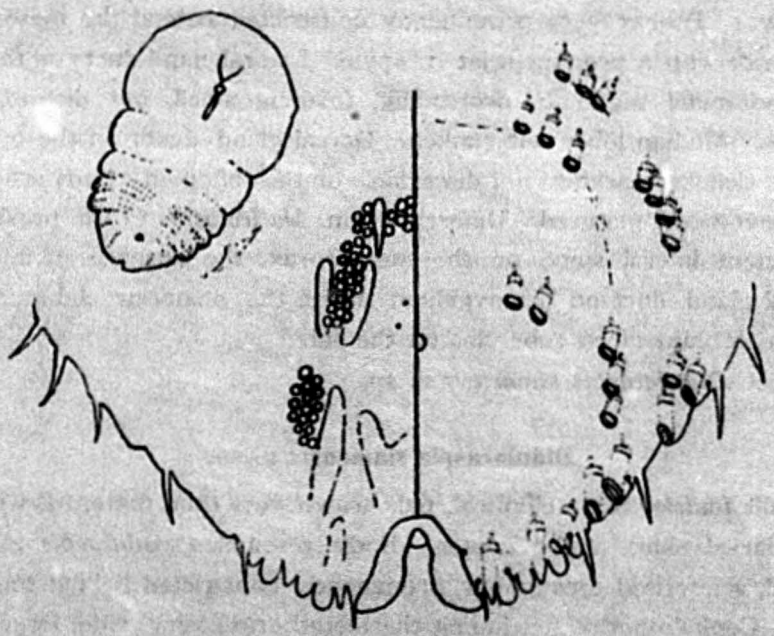

Fig. 21.
Aulacaspis cambodiensis n. sp.
Adult female.
Body and pygidium.

median lobes and the rounded 2nd lobes. Another species of *Aulacaspis* was found on a tree of the Lauraceae at Angkor, which is closely related to *A. phoenicis* GREEN, but the lobules of lateral lobes are not widely separated. The species is represented by a few incomplete specimens and is not here described.

Aulacaspis mangiferae GREEN.

Thailand: Bangkok, common, but occurring in small colonies on mango (III. 1940); Korat, some on mango (5. V. 1940).

In the adult female, median lobes parallel on the mesal margins except on the divergent distal parts and more rounded apically than in the figure by GREEN (Rec. Indian Mus., XVI, pl. 26, fig. 1 a). *Aulacaspis sumatrensis* GREEN known to attack mango was not found in Thailand.

Aulacaspis rosae BOUCHÉ.

Thailand: Chiengmai, common on rose (14. IV. 1940).

Diaulacaspis n. g.

(Adult female) Resembles *Aulacaspis* in the shape of body, but differs

as follows: Thorax very prominently constricted behind the mesothorax, metathorax with a prominent lateral spine. Lateral gland ducts on the posterior abdominal segments protruding, forming small, but distinct, blunt tubercles. Median lobes not sunken. Dorsal gland ducts on the pygidium slender. Cellular markings not discernible on the abdomen. Body sclerotised throughout when matured. Different from *Malleolaspis* in the presence of a prominent lateral spine on the mesothorax, the absence of a median marginal gland duct on the pygidium and in the posterior abdominal segments with blunt gland tubercles on the side.

Type—*Diaulacaspis siamensis* n. sp.

Diaulacaspis siamensis n. sp.

(Adult female) Scale elliptical, pale brown, very thin, flattened, with pale brown larval skins at the center. Body resembles *Aulacaspis* in shape, flattened, sclerotised throughout, prominently constricted behind the mesothorax. Cephalothorax (excluding the metathorax) very wide, large, much wider than the metathorax, much wider than long, very slightly longer than the remaining part of body, with about 5 very shallow indentations on the margin, and about 17 minute triangular tubercles on the anterior and latero-anterior margins, which are pointed at the tip and as long as wide. Metathorax distinctly protruding laterally, well defined, bluntly pointed laterally, with a prominent stout spine on the lateral end, which is pointed or blunt at the tip, sliphtly curved, directed forwards and much longer than wide. Abdominal segments distinct except on the lateral part, without cellular pale markings, the basal segment protruding laterally, truncate or blunt at the lateral end, a little narrower than the metathorax, with a short fine seta at each lateral end; the 3rd segment with 1 or 2 gland ducts on the side and a few sublateral gland ducts; the 4th with 2 or 3 lateral gland spines, 3 or 4 lateral gland ducts and a few sublateral gland ducts; the lateral gland ducts protruding beyond the body margin, forming small, but distinct, blunt tubercles on the 3rd and 4th segments; the ducts and gland spines as large as those on the pygidium. Antennae rather closely placed. Spiracles slender on the stalk, with 2 or 3 pores. Pygidium much wider than long, not rounded, not indented at the hind end, with the anal opening small and nearly at the center. Gland spines extending beyond the lobes, about 8 on each side. Marginal gland ducts stout, distinctly longer than wide, 7 on each side, the anterior one often smaller; the posterior one prominently protruding, the protuberance nearly as large as the median lobe. Dorsal

gland orifices small, about 10 on each side, the ducts slender, but a posterior pair larger, as large as the marginal ones. Lobes small; median lobes not sunken, very slightly narrowed basally, a little wider than long, slightly notched near the apex on the mesal side, broadly rounded apically, parallel, a little separated, the space between them narrower than the lobes, with a small

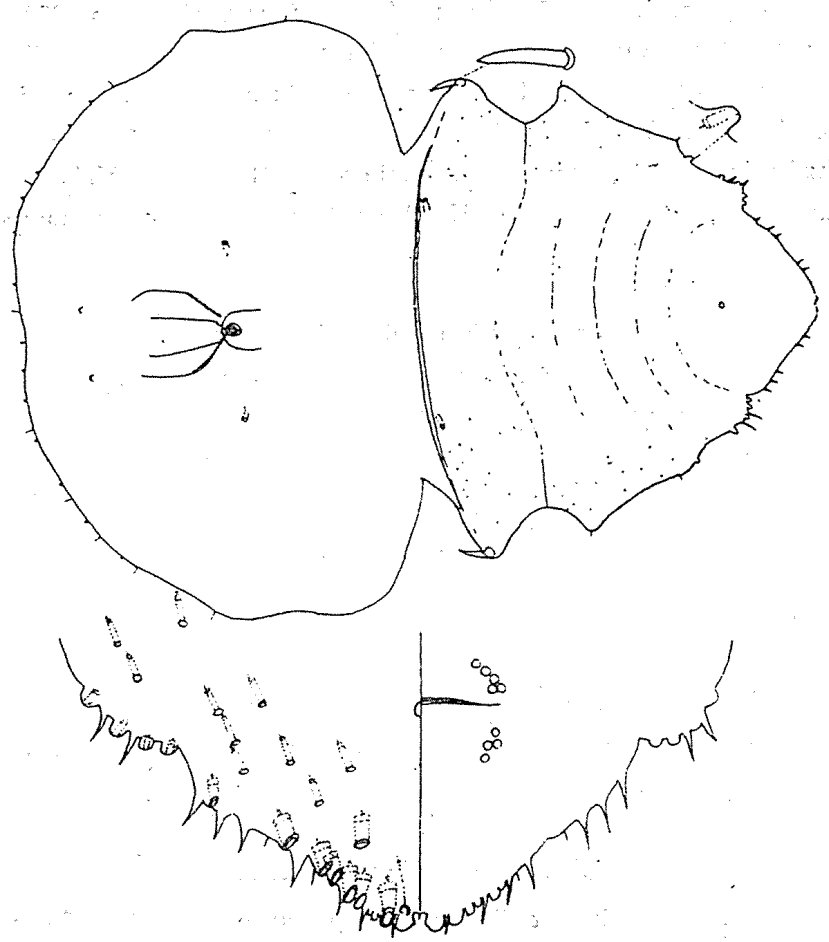

Fig. 22.
Diaulacaspis siamensis n. sp.
Adult female.
Body and pygidium.

median process; the 2nd lobes very small, duplicate, truncate or broadly rounded apically, the mesal ones somewhat narrowed basally in some specimens, the lateral ones very small, sometimes indistinct; other lobes absent. Circumgenital pores in 4 groups, 5 or 6 in the anterior group, 4 in the posterior. Body 0.97 mm. long, 0.74 mm. wide on cephalothorax, 0.6 mm. wide on metathorax, mesothoracic spine 0.028 mm.

Thailand: Chiengmai, some specimens on the lower side of the leaf of *Dipterocarpus* sp. ? (V. 1940); Ubon, a few specimens on a tree of the Lauraceae (4. V. 1940).

Greenaspis elongata GREEN.

Cocc. Ceylon, II, p. 125 (1899); MACGILLIVRAY, Cocc., p. 339 (1921); TAKAHASHI, Dept. Agr. Research Inst. Formosa, Rept. no. 40, p. 73 (1929); RAMAKRISHNA AYYAR, Imp. Inst. Agr. Res. Pusa, Bull. 197, p. 16 (1929); FERRIS, Microent., I, p. 57 (1936).

Thailand: Bangkok, many on bamboo (24. III. 1940). Malaya: Kuala Lumpur, some on bamboo (20. III. 1940); Penang, a few on bamboo (21. III. 1940).

Lepidosaphes lasianthi GREEN.

Jl. Bombay Nat. Hist. Soc., XIII, p. 253 (1900); FERRIS, Atlas Sc. Ins. N. America, II, no. 145 (1938).

Thailand: Bangkok, abundant on croton (29. III. 1940).

Lepidosaphes cocculi GREEN.

Cocc. Ceylon, I, p. 81 (1896).

Thailand: Bangkok, some on an unknown plant (28. III. 1940).

Lepidosaphes gloverii COMST.

Thailand: Bangkok, common on *Citrus* (III. 1940); Chiengmai, abundant on *Citrus* (IV. 1940); KORAT, a few on *Citrus* (5. V. 1940).

Lepidosaphes cinnamomi TAKAH.

Dept. Agr. Research Inst. Formosa, Rept. 60, p. 48 (1933); PEKING Nat. Hist. Soc. Bull., X, p. 220 (1936).

Indo-China: Haiphon, many on *Cymbidium* (30. VI. 1940).

The specimens from Haiphon have about 11 parastigmatic pores near the anterior spiracle and more circumgenital pores than in the original description.

Fiorinia nephelii MASK.

Ent. Month. Mag., XXXIII, p. 242 (1897).

Thailand: Bangkok and Chiengmai, very common on *Euphoria longana* (III.–VI. 1940).

The median lobes of the 2nd larval skin are longer than in the figure by Ferris (Microent. I, p. 6), with the apices narrowed, like the Formosan specimens on the same host, while those of the Formosan specimens on *Nephelium litchi* are shorter and serrate.

Fiorinia payaoensis n. sp.

(Adult female) Yellowish brown, shining, pale on the margin, convex dorsally, with a rather wide ridge; the 2nd skin narrow, gradually much narrowed towards the front end, not thick, about 0.92 mm. long, 0.3 mm. wide; the pygidium distinctly incised at the hind end, with 4 marginal gland ducts and 4 long gland spines on each side, the anterior one of which is sometimes shorter; median lobes much narrowed towards the base, rounded apically, small, not serrate, diverging, confluent basally, a little protruding out of the incision; the 2nd lobes somewhat longer than wide, a little narrowed towards the apex, rounded apically, larger than the median lobes; not divided, sometimes notched on the mesal side, extending forwards. Body narrow, much narrowed gradually towards the front end, thick, a little sclerotised on the venter, with no lateral protuberances and spines, widest on the abdominal segments. Antennae separated, with a long curved bristle and a few minute processes; no tubercle present between them. Mouth

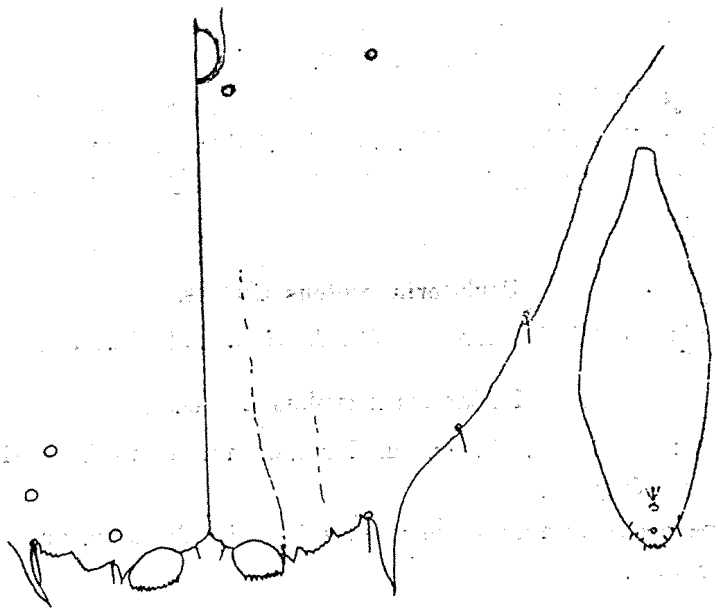

Fig. 23.
Fiorinia payaoensis n. sp.
Pygidium of adult female and 2nd larval skin.

parts large. Anterior spiracles with about 4 pores, posterior spiracles without them, each on a more or less defined area. Pygidium normal in shape, slightly incised at the hind end; anal opening large, nearer to the base than to the apex. Gland spines long, 1 or 2 on each side beyond the 2nd lobe. Marginal gland ducts small, about 3 on each side, sometimes not discernible. Median lobes large, stout, wider than long, protruding, truncate or broadly rounded at the distal margin, not notched, minutely serrate, separated, diverging; the space between them as wide as, or slightly narrower than, the lobes, with a pair of short setae; the 2nd lobes very short, wide, serrate, sometimes indistinct, much smaller than the median lobes, simple or divided. Some very small setae on the submarginal area. Circumgenital pores large, 1 or 2 in the median group, 3-6 in the latero-anterior group, 12-14 in the latero-posterior. Body about 0.63 mm. long, 0.21 mm. wide.

Thailand: Payao, north of Lampang, many on an undetermined tree, found along the margin and midrib of the leaf (16. IV. 1940).

This species is characterised by the body much narrowed on the anterior part.

Ischnafiorinia bambusae MASK.

Fernald, Cat. Cocc. World, p. 246 (1903); MACGILLIVRAY, Cocc., p. 378 (1921); FERRIS, Microent., I, p. 61 (1936).

Thailand: Chiengmai, common on bamboo (3. IV. 1940). Malaya: Penang, many on bamboo (21. III. 1940).

Scale of the adult female very long, narrow, pale yellowish brown, with a brownish median ridge; pygidium of the 2nd larval skin more rounded on the posterior part than in the figure by FERRIS. Hitherto known from China alone.

Parlatoria proteus CURTIS.

Thailand: Bangkok, many on *Dendrobium* and *Vanda* (29. III. 1940).

Parlatoria zizyphus LUCAS.

Thailand: Bangkok, Chiengmai, Korat, common on *Citrus* (III.-VI. 1940), not found on *Zizyphus*.

This species is commonly seen on *Citrus* in Thailand, but much fewer than in Formosa.

Parlatoria pergandei COMST.

Thailand: Chiengrai, a few on an unknown tree (17. IV. 1940).

Parlatoria fici n. sp.

(Adult female) Scale yellowish brown, dark green or blackish on the median areas of the larval skins, like *P. proteus* CURTIS in shape, ovate, convex dorsally, about 1–1.2 mm. long; the 2nd skin subcircular, about 0.47 mm. long, 0.42 mm. wide, with the abdominal segments distinct on the median area and with rhachis-like markings like the larvae of some Aleyrodidae; the pygidium slightly protruding, with lobes and plates similar to those of the adult (but the plates outside of the last lobe fewer, about 20, shorter and variable in length), and 3 stout marginal gland ducts on each side. Body subcircular, a little longer than wide; cephalothorax with some minute setae on the submarginal area; meso- and metathorax a little convex laterally, with 2 or 4 small conical lateral tubercles, which are blunt apically; abdomen with a small circular part on the submarginal area of basal segment, and about 25 prominent plates in a row on each side outside of the 3rd lobe on the pygidium, the plates much longer than wide, mostly serrate or with some small notches, longer than those on the posterior part

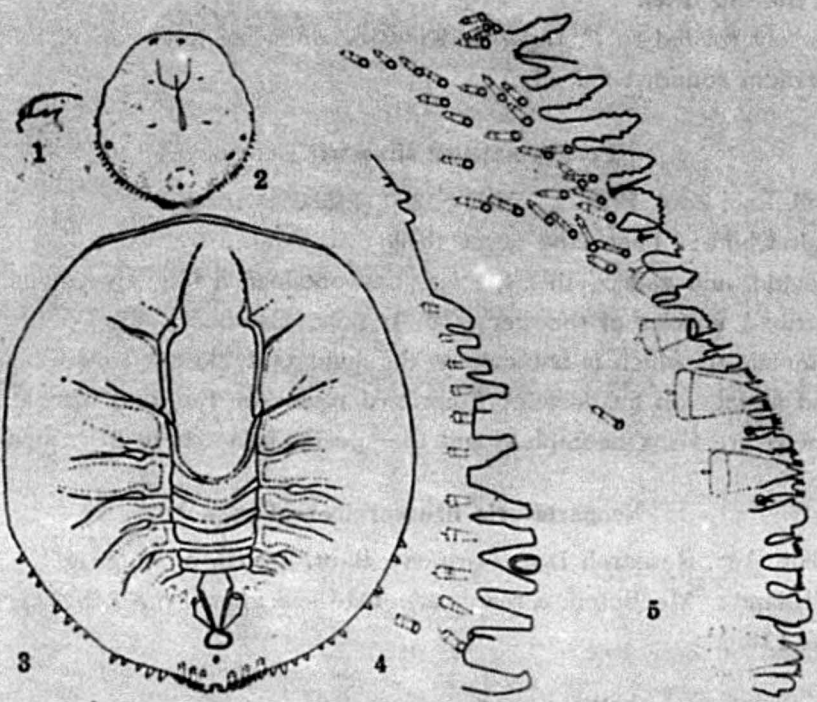

Fig. 24.
Parlatoria fici n. sp.
Adult female.
1. Antenna. 2. Body. 3. 2nd larval skin. 4. Margin of basal abdominal segments. 5. Pygidium.

of pygidium. Antennae with a long bristle and a shorter process. Anterior spiracles with a pore. Pygidium much wider than long, not rounded in general outline; anal opening small, longitudinal, behind the genital opening. Median lobe prominently notched on each side, rounded apically, a little longer than wide, slightly diverging, widely apart; the 2nd and 3rd lobes similar in shape to, but much smaller than, the median ones; a slender thickening extending anteriorly from the base of each median lobe; 2 fimbriated plates between the median lobes hardly reaching the apices of the lobes, 2 between the median and 2nd lobes sometimes obscured by the protuberance of a marginal gland duct, 3 between the 2nd and 3rd lobes. Marginal gland ducts stout, 4 on each side; the posterior one somewhat larger; no median duct present. Dorsal gland orifices very small, many, present only on the submarginal area, the ducts slender. Circumgenital pores in 5 groups, each group with 4 pores almost in a row. Body 0.42 mm. long.

Thailand: Chiengmai, many on the upper surface of the leaf of *Ficus retusa* (10. IV. 1940).

Closely related to *P. itabicola* KUWANA, differing, however, in the lobes of pygidium rounded apically.

Porogymnaspis silvestrii BELLIO.

Boll. Lab. Zool. Portici, XXII, p. 220 (1929).

Indo-China: Than Hoa (after Belilo).

I could not collect this species, but obtained a few specimens of an undescribed species of the genus at Angkor, Cambodia (23. IV. 1940), the adult female of which is truncate at the hind end like *P. rufa* GREEN and the 2nd larval skin has slender fimbriated plates on the hind margin. The specimens are very incomplete and the species is not here described.

Neoparlatoria lithocarpicola TAKAH.?

Dept. Agr. Research Inst. Formosa, Rept. no. 63, p. 30 (1934).

Thailand: Mt. Sutep, a few inadequate specimens, on *Lithocarpus* sp. (11. IV. 1940).

Silvestraspis uberifera LINDINGER.

Zeits. f. wiss. Insbiol., VII, p. 126 (1911); BELLIO, Boll. Lab. Zool. Portici, XXII, p. 160 (1929); TAKAHASHI, Dept. Agr. Research Inst. Formosa, Rept. no. 60, p. 52 (1933); FERRIS, Microent., VI, p. 20 (1941).

Indo-China: Angkor, Cambodia, a few on an undetermined tree (24. IV. 1940).

Silvestraspis sinensis BELLIO is a synonym of this species.

Aspidiotus excisus GREEN.

Cocc. Ceylon, I, p. 53 (1896); CEYLON Jl. Sc., B, XX, p. 330 (1937).

Thailand: Chiengmai, some on an undetermined tree (12. V. 1940).

Aspidiotus lataniae SIGNT.

Thailand: Chiengmai, abundant on *Samanea saman* (IV. and V. 1940); Bangkok, a few on a palm (25. III. 1940); Mt. Sutep, a few (11, V. 1940).

Aspidiotus destructor SIGNT.

Thailand: Bangkok, many on mango (27. V. 1940); Lampang, a few on a legume (1. IV. 1940); Chiengmai, a few on a palm (2. IV. 1940); Mt. Sutep, many on *Lithocarpus* and *Dipterocarpus* sp. ? (V. 1940).

Indo-China: Angkor, Cambodia, a few (24. IV. 1940).

Very common, but usually occurring in restricted numbers, in Thailand.

Aspidiella subterranea MAMET.

Trans. Roy. Ent. Soc. London, LXXXIX, p. 580 (1939).

Thailand: many on *Curcuma longa;* collected by plant inspectors at Kobe, Japan, on the host imported from Thailand (V. 1938).

The specimens agree with those taken on *Zingiber* in Mauritius. Related to *A. hartii* CKLL., but the 2nd lobes much reduced in size. The coccid recorded under the name of *A. hartii* CKLL. by GREEN from *Curcuma* in India (Rec. Ind. Mus., XVI, p. 439) may be this species.

Aonidiella sotetsu TAKAH.

Dept. Agr. Research Inst. Formosa, Rept. no. 60, p. 57 (1933); MCKENZIE, Microent., III, p. 13 (1938).

Thailand: Bangkok, a few (28. III. 1940).

The last 2 abdominal segments without a macroduct in the specimens from Bangkok.

Aonidiella aurantii MASK.

Thailand: Ubon, some on *Citrus* (4. V. 1940).

Indo-China: Angkor, Cambodia, some on *Citrus* (23. IV. 1940).

Aonidiella godfreyi n. sp.

(Adult female) Scale circular, slightly convex, pale yellowish brown, a little grayish, 1.5 mm. in diameter. Body sclerotised, irregular in shape, wider than long, with some regular indentations on the margin, lacking lateral spines; prosomatic lobes broadly rounded apically, a little protruding posteriorly in the young adult, with 2 rather short ducts near the apex; postsomatic region entirely retracted into the prosoma in the old female; the 2nd abdominal segment distinctly and narrowly protruding laterally, with 2 long lateral setae, with no lateral duct; the 3rd segment a little protruding laterally, with 2 lateral setae, but no duct. Spiracles without pores. Antennae much nearer to the front margin than to the mouth parts, with a long bristle. Pygidium without scars and prevulvar scleroses or apophyses. Lobes usual in shape, median lobes much larger than the 2nd, about twice as wide as the 2nd, the 2nd and 3rd subequal in size, rather small; the 4th represented by small mere triangular processes, which are slightly serrate on the lateral side. Fimbriated plates extending

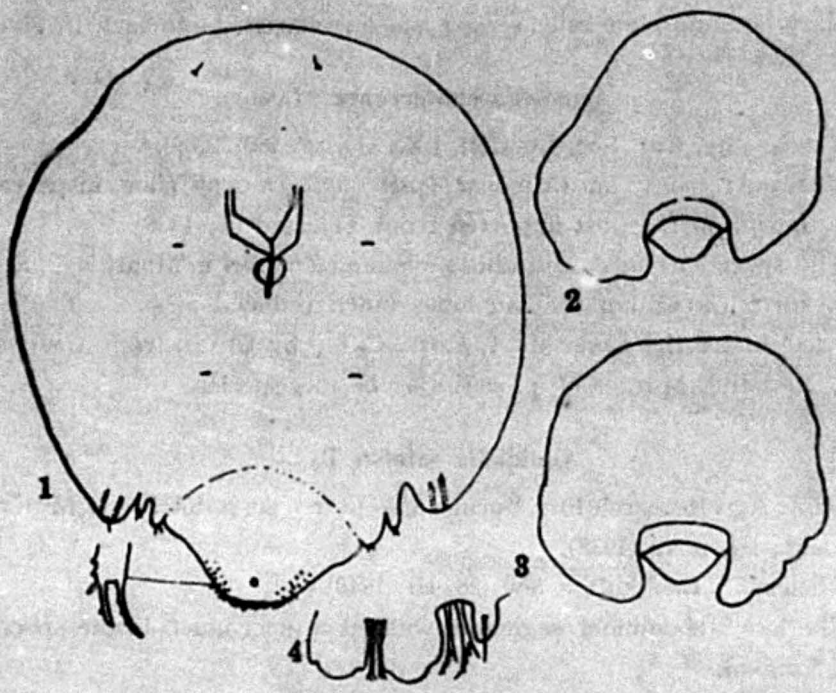

Fig. 25.
Aonidiella godfreyi n. sp.
Adult female.
1. Young adult. 2. and 3. Body of old female.
4. Median and 2nd lobes.

a little beyond the apices of lobes, 2 between the median lobes, and between the median and 2nd, 3 between the 2nd and 3rd, and between the 3rd and 4th; those between the 3rd and 4th deeply divided, not longer than those between the 2nd and 3rd; no plates beyond the 4th. Dorsal gland orifices mostly in 2 rows on each side, about 4–6 in a row. Circumgenital pores wanting. 3 pairs of submarginal setae present on the posterior part of pygidium. Body 1.3 mm. wide.

Thailand: Chiengmai, many on an undetermined tree (2. IV. 1940).

Related to *A. sotetsu* TAKAH., but differs in the abdomen entirely retracted into the prosoma, the pygidium smaller, the abdominal segments without lateral ducts, and in the median lobes distinctly larger than the 2nd; and even in the old female body without irregular vermiculate markings on the cephalothorax. Distinguished from *A. inornata* MCKENZIE by the median lobes much larger than the 2nd. Named after the late Mr. GODFREY, who contriduted much to the entomology of Thailand.

Chrysomphalus dictyospermi MORGAN.

Thailand: Chiengrai, a few on *Citrus* (17. IV. 1940).

Chrysomphalus pinnulifer MASK.

Trans. N. Z. Inst., XXIII, p. 4 (1890); BALACHOWSKY, Bull. Soc. Hist. Nat. Africa Nord., 1928, p. 180 (1928); MCKENZIE, Microent., IV, p. 61 (1939).

Thailand: Ubon, many on a tree of the Lauraceae (4. V. 1940).

The scale of adult female brown, not reddish, but the morphological details well agree with MCKENZIE's diagnosis and figures. Closely related to *C. dictyospermi* MORGAN, but the dorsal gland orifices more in number on the pygidium and the 2nd abdominal segment with about 6 lateral macroducts.

Stringaspidiotus curculiginis GREEN.

Ent. Month. Mag., ser. 2, XV, p. 208 (1904); FERRIS, Microent., II, p. 98 (1937).

Thailand: Bangkok, a single adult female (28. III. 1940). Malaya: Fanting Squpah, a few on *Gardenia* (19. VII. 1939).

The lobes of pygidium as in the figure by GREEN, but the circumgenital pores like the figure by FERRIS. Hitherto recorded from Java.

Pseudaonidia trilobitiformis GREEN.

Thailand: Ubon, a few (4. V. 1940); Chiengmai, a few on *Ficus* sp. (6. IV. 1940); Bangkok, a few (12. VI. 1940).

Indo-China: Angkor, Cambodia, a few (24. IV. 1940).

Recorded from Burma by Lindinger (Zeits. f. wiss. Insbiol., VII, 1911, p. 130).

Frogattiella siamensis n. sp.

(Adult female) Scale white, with yellowish larval skins. Body dark brown in dried specimens, variable in shape, sclerotised on the marginal area, especially on the head and pygidium; abdominal segments distinct, with many small lateral indentations. Antennae very widely apart, more widely so than the anterior spiracles, with a curved seta. Anterior spiracles with 3 or 4 pores, posterior spiracles without them, slender on the stalk. Pygidium tapering, slightly sinuate at the tip, with some very small indistinct pointed protuberances on the side, many minute circular pores on the dorsum and venter, and rather long, but very thin, rather long gland ducts. Scleroses slender, the mesal pair as long as, or a little longer than, the lateral ones, a little expanded at the anterior end, the space between them

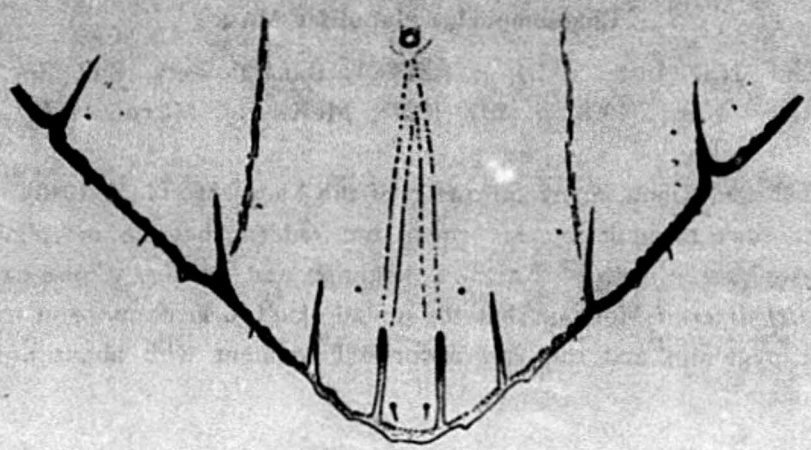

Fig. 26.
Frogattiella siamensis n. sp.
Adult female.
Pygidium.

as wide as that between the mesal and lateral ones; a pair of moderate setae present between the mesal scleroses on the posterior part, which setae are not reaching the hind end of pygidium. Body 2.3–2.45 mm. long, 1.38–1.8 mm. wide.

Thailand: Bangkok, Chiengmai, many on bamboo, attacking the stalk (IV. and V. 1940).

Closely related to *F. inusitata* GREEN, differing, however, as follows: Pygidium tapering, less indented at the hind end; the posterior setae not reaching th hind end. Space between the mesal scleroses as wide as that between the mesal and lateral scleroses. Anterior spiracles with fewer pores.

泰國及印度支那ニ於ケル農林害蟲ニ就テ (II)

介 殼 蟲 類

摘 要

介殼蟲類ハ熱帶及亞熱帶ニ殊ニ繁榮シ、多數ノ栽培植物ニ寄生加害シ、又ラック介殼蟲及白蠟蟲等ノ有益ナル種類ヲ含ミ、應用上甚重要ナル昆蟲ノ 1 群デアル。

從テ、印度、セイロン、馬來、フイリツピン及臺灣ニ於テハ此等ノ昆蟲ニ就テ幾多ノ研究ガ行ハレ、殊ニセイロン及臺灣ニ於テハ、ソノ研究ガ甚進歩シテ居ル。

然ニ泰國ニ於テハ一般害蟲類ノ研究ハ甚未開拓デアツテ、殊ニ介殼蟲ハ閑却セラレ、從來 LINDINGER 1911, REINKING 1921, STRONG 1922, COCKERELL 1929, GREEN 1932 ニヨリ 6 種ガ斷片的ニ記錄セラレ、又同國ヨリ日本ニ輸入セラレタル植物ニ發見セラレタ約 10 種ガ、白岩秀雄氏等ノ植物檢査官ニヨツテ報告セラレタルニ過ギナイ。

佛領印度支那ニ於テモ、此類ノ調査ハ未開拓デアツテ、從來 SILVESTRI 1926, 1929, BELLIO 1929, DU PASQUIER 1932, CARESCHE 1937 等ニヨリ、柑橘、茶樹及コーヒー等ニ害生スル 10 餘種ガ記錄セラレタルニ過ギナイ。

余ハ昭和 15 年泰國及印度支那ニ旅行スル機會ヲ得タルヲ以テ、是等昆蟲類ニ注意ヲ拂ヒ、ソノ材料ヲ集メルニ努メ、ラック介殼蟲及泰國產蟻ト共棲スル 2 種ニ關スル調査ノ結果ハ既ニ報告シタ。本文ニテハ、ソノ他ノ介殼蟲類約 98 種ヲ列記シ、ソノ產地及加害植物等ヲ報告シタ。ソノ中約 25 種ハ學術上新種ト認メラレ、新ニ學名ヲ附シテ特徵ヲ記載シタ。又ソノ 98 種ノ中 88 種ハ泰國ニ發見セラレ、22 種ハ印度支那ニ見ラレ兩國ニ共通ノ種類ハ 12 種デアル。

是等ノ國ニ於テ栽培植物ニ加害スル種類ノ大部分ハ、近隣諸地方ニモ廣ク分布スルモノデアルガ、此地方特有ノ種類モ發見サレタ。例ヘバ泰國ニテ柑橘ニ寄生スル 11 種ノ中ノ 1 種ハ同國特有ノ種デアリ、マンゴーニ加害スル 10 餘種ノ中 2 種ハ同國固有ト認メラレ、又木瓜及ナツメニモ固有ノ種類ガ見ラレル。ソノ他ノ栽培植物ニモ未ダ臺灣ニ分布セザル多數ノ種類ガ寄生シ、此等ハ交通ノ發達ト共ニ、苗木等ト共ニ本島ヘ侵入スルヲ防止スルヲ要スル。

森林樹木ニハ多數ノ固有種ガ發見セラレ、殊ニカシ類及イチヂク屬 Ficus 樹木ニハ多數ノ種類ガ寄生スル。

今本文中ニ記錄セル主ナル種類ヲ示スト次ノ如クデアル。此等ノ種類ノ多數ヘ多食性ナルタメ、今後他ノ植物ニモ加害スルコトガ明ニナルト思ハレル。

泰　國　産

(柑橘) Icerya seychellarum WESTW., Pseudococcus citri RISSO, P. comstock KUWANA, P. filamentosus CKLL., Coccus hesperidum L., C. viridis GREEN, Saissetia hemisphaerica TARG., Platylecanium citri n. sp., Lepidosaphes gloverii COMST., Aonidiella aurantii MASK., Parlatoria zizyphus LUCAS.

(S. hemisphaerica TARG. ハコーヒー及瓜類ニモ加害ス)

(マンゴー) Icerya tangalla GREEN, Puto spinosa ROBINSON, Coccus punctuliferus GREEN, Lecanium formicarii GREEN, Megalocryptes buteae n. sp., Saissetia oleae BERN., Xenolecanium mangiferae n. sp. Vinsonia stellifera WESTW., Aulacaspis mangiferae GREEN, Unaspis acuminata GREEN, Aspidiotus destructor SIGNT.

(龍眼) Lecanium formicarii GREEN, Eucalymnatus tessellatus SIGNT., Pulvinaria psidii MASK., Ceroplastes rubens MASK., C. ceriferus AAND., Fiorinia nepheli MASK., Aspidiotus destructor SIGNT.

(ナツメ) Pseudococcus filamentosus CKLL., Megalocryptes buteae n. sp., Phenacaspis papayae n. sp., Aspidiotus destructor SIGNT.

(木瓜) Phenacaspis papayae n. sp.

(サボジラ) Pseudococcus tayabanus CKLL., Coccus viridis GREEN, Saissetia hemisphaerica TARG.

(バンノキ等) Coccus elongatus SIGNT., Saissetia nigra NIETN., Pulvinaria maxima GREEN.

(草棉及ブツサウゲ) Phenacoccus hirsutus GREEN, Saissetia nigra NIETN.

(竹類) Antonina thaiensis n. sp., Asterolecanium minutum TAKAH., Greenaspis elongata GREEN, Ischnafiorinia bambusae MASK., Frogattiella siamensis n. sp., Kuwanaspis suishana TAKAH.

(椰子類) Phenacaspis dilatata GREEN, Aspidiotus lataniae SIGNT.

(Butea) Megalocryptes buteae n. sp., Aulacaspis buteae n. sp., Coccus punctuliferus GREEN.

(アメリカネム) Perissopneumon sp., Ferrisiana virgata CKLL., Coccus elongatus SIGNT., Aspidiotus lataniae SIGNT.

(カシ類) Lecaniodrosicha sp., Eriococcus sutepensis n. sp., Kermes siamensis CKLL., Megalocryptes buteae n. sp., Lecaniodiaspis cremastogastri TAKAH. var. foochowensis TAKAH., Chionaspis lithocarpi n. sp., C. lithocarpicola n. sp., Pinnaspis lithocarpi TAKAH. var. siamensis n. var., Neoparlatoria lithocarpicola TAKAH., Aspidiotus destructor SIGNT. 等。

(雑) (ウコン) Aspidiella subterranea MAMET, (バラ) Aulacaspis rosae

BOUCHÉ, (クロトン) Lepidosaphes lasianthi GREEN, (ラン類) Parlatoria proteus CURTIS. ソノ他多數。

印度支那産

(柑橘) Puto spinosa ROBINSON, Pseudococcus comstocki KUWANA, Aonidiella aurantii MASK. (P. spinosa ROBINSON ハマンゴーニモ寄生ス)。

(パンジロウ) Saissetia hemisphaerica TARG., Pulvinaria psidii MASK.

(椰子類) Phenacaspis dilatata GREEN.

(ラン類) Pinnaspis megaloba n. sp., Lepidosaphes cinnamomi TAKAH.

(林木) Farrisiana virgata CKLL., Pseudococcus angkorensis n. sp., Trionymus cambodiensis n. sp., Coccus cambodiensis n. sp., Paralecanium angkorense n. sp., Aulacaspis cambodiensis n. sp., Porogymnaspis sp., Silvestraspis uberifera LIND., Pseudaonidia trilobitiformis GREEN, Aspidiotus destructor SIGNT. 等。

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